

AMERICAN GAS ASSOCIATION MONTHLY



Vol. IV

No. 2

FEBRUARY, 1922

THE happiness of those who approach the highest point of the science in which they labour to attain perfection, must in my opinion be very great, more especially when, in addition to the satisfaction assured to all who strive conscientiously, they perceive themselves to derive some benefit from their labours.

—Vasari

C O N T E N T S

VOLUME IV

FEBRUARY, 1922

NUMBER 2

Affiliated Associations	117
Another Gas Company Opens an Attractive Show Room	92
Backs McFadden Tax Amendment	71
Bulletin of Abstracts Reduced in Price	75
Chemical Abstracts	113
Cost of Living	84
Editorial—"Gas Cooking in the Beginning"	66
Employment Bureau	128
Engineering Service	76
Experiments at Davenport in the Use of Coal and Coke Mixtures as Water Gas Generator Fuel	73
"Fuel Facts and Fancies"	116
Good-Will Advertisement No. 22	85
Gas's Gossip in Booklet Form	86
Have You Ever Thought of This?	91
In Memoriam	74-123
London's Fuel Waste	87
Making Your Window Bring Business	95
More Light—Less Gas	96
Municipal Shops Closed in Chicago	100
Neighbor Thompson's Gas Company	86
New Chat Ads. Ready	87
New Members	73
Proposed Standard Specifications for Bench of Sixes	97
Question Box	118
Rate Changes	124
Report of the Technical Committee on Gas Oil, 1921	105
Successful Experiment in Cooperation, A	77
Tell Your Story	83
Thermostatic Control	100
Thoughts for the Gas Man from the Second Annual Meeting of the Ameri- can Petroleum Institute	101
What are the Gas Companies Doing to Develop Cooperation with Uni- versities?	67
What it is that Customers Find Objectionable	88
1922 to be a Year of Intensive Sales Effort	89

AUTHORS

DeHart, Jr., J. S. "Proposed Standard Specifications for Bench of Sixes" ..	97
Fulweiler, W. H. "Report of the Technical Committee on Gas Oil, 1921" ..	105
Fulweiler, W. H. { "Thoughts for the Gas Man from the Second Annual Harper, R. B. { Meeting of the American Petroleum Institute"	101
Hall, O. D. "Tell Your Story"	83
Morrison, Chas. E. "Successful Experiment in Cooperation, A"	77

FOR STATEMENTS AND OPINIONS CONTAINED IN PAPERS AND DISCUSSIONS
APPEARING HEREIN, THE ASSOCIATION DOES NOT HOLD ITSELF RESPONSIBLE

AMERICAN GAS ASSOCIATION MONTHLY
OFFICE OF PUBLICATION, BRATTLEBORO, VT.
SUBSCRIPTION RATE \$3.00 PER YEAR

Application for entry as Second Class Matter December 28th, 1921, at the Post
Office at Brattleboro, Vt. under Act of March 3, 1879 and for acceptance for Mailing
at Special Rate of Postage Provided for in Section 1103, Act of October 3, 1917, pending.

American Gas Association Monthly

Vol. IV

FEBRUARY, 1922

No. 2

Gas Cooking—In the Beginning

In 1851, Samuel Clegg, jr., in a letter to the editor of the Journal of Gas Lighting wrote:

Sir,—In the Expositor of last week I saw a portrait of Mr. Sharp, the manager of the Southampton Gas Works, and an article claiming for him the invention of cooking by gas. Now, I do not believe any man living can claim it as his invention. In 1739 Dr. Clayton boiled eggs by a gas flame; in 1792 Mr. Murdock frequently cooked chops and steaks over gas jets; and, in 1824, I perfectly well remember the men at the Ætna Iron Works, near Liverpool, making a gas cooking apparatus, which consisted of a gun-barrel turned backwards and forwards, and pierced with numerous small holes. When anything had to be fried the gridiron was kept in a horizontal position; when anything had to be roasted it was turned in a vertical position, and a plate of tin was placed behind the meat, as a reflector, or hastener, as I think the cooks call it. Mr. Sharp may have contrived a stove for cooking by gas; that is, pieces of iron so placed as to hold different things—some perhaps, requiring to be boiled, others to be fried or roasted; but I believe that Mr. Alfred King, of Liverpool, arranged (I won't call it invented, for it is not worth the name, and I am sure Mr. King will not quarrel with the word) the first convenient apparatus for cooking by gas. Gas cooking stoves are not yet perfect; but they are already economical, and I hope will very soon be universal.

Putney, March 2, 1851.

Six years later an extract from the original minutes of the Middlesborough, England Corporation (Gas Dep't), ran as follows:—

July 16, 1857.

"Mr. Avery has applied for a supply pipe from the works to his hotel to enable him to use gas in the day for cooking. The Committee agree to laying a pipe so soon as the apparatus is ready provided Mr. Avery will guarantee a reasonable additional consumption to warrant the outlay."

Note that the gas was evidently shut off the town during the day and that this is a request for a continuous supply for cooking.

AMERICAN GAS ASSOCIATION MONTHLY

Vol. IV

FEBRUARY, 1922

No. 2

What are the Gas Companies Doing to Develop Co-operation with Universities and Colleges in the Training of Their Present and Future Employees

MORE and more the managers of gas companies are appreciating the vital importance of attracting to the industry young men whose education has been designed to equip them for the solution of problems pertinent to our work. If the technical development of the future is to keep pace with the demands for better service and increasing efficiency it is essential that we supplement the ranks of our present technical organizations with as large a proportion as possible of the young men who are now fitting themselves to carry the burden of scientific research in the coming generation.

This is common sense but the best results in the consummation of this desirable condition will not be induced by a passive policy of watchful waiting. Some

systematic and aggressive policy of keeping in touch with these students must be adopted,—of interesting them in the possibilities our industry holds forth to them for a career in which their own abilities can be developed to the utmost—of inducing them to develop their technical education in college with a view to its practical use in our industry.

That this thought was uppermost in many minds was indicated at the discussions of the recent convention. The most practical means of course lies through the development of the closest co-operation between the industry and the various technical colleges and universities. Instances of such co-operation were cited, such as scholarships established by state and district gas associations, with

A. G. A. MONTHLY

special postgraduate work entailing research on current problems of the industry, special lectures for junior and senior classes, etc. Notable among these instances was a description of a vertical re-tort installation at Ohio State University in connection with a course in gas engineering requiring that students take positions with gas companies during the summer vacations; and the actual employment by one of our larger companies of a chemical student to study and report on a practical schedule of steam operation. It is hoped to print in subsequent issues articles descriptive of these two latter activities and to keep before our members through the Committee on Co-operation with Universities, the progress that is being made in this very important work.

This Committee contemplates a constructive program for developing co-operation with technical universities that will be productive of results. The importance of this work warrants your giving the Committee and its Chairman, Mr. F. C. Weber of the Henry L. Doherty Company, 60 Wall Street, New York City, your whole-hearted co-operation. Part of their program will be to give publicity through the A.G.A. Monthly to the work at present being done by different associations and others in co-operation with universities in different parts of the country. Too little is now known of the extent of this present work and the scope of the courses and cooperative plans in existence. You can help the Committee by bringing to their attention local instances of such co-operative effort with full descriptions of the activity where these are known to you.

In the meantime there has been presented an instance of the initiative of the

gas men of the Middle West in co-operation with the Iowa State University at Ames, which is along related lines in that it seeks to improve and educate the men already employed in gas company work through courses conducted at the Engineering Extension Department of the Iowa State College.

We are pleased to reprint here a brief description of the first course at Iowa State College as submitted by Mr. H. R. Sterrett, Secretary-Treasurer of Iowa District Gas Association:

First Short Course for Gas Meter Men

The Iowa District Gas Association in conjunction with the Engineering Extension Department of the Iowa State College at Ames, has just successfully conducted a short course for gas meter men. This is believed to be the first course of its kind, and the results were so gratifying that it was thought a brief description of the course would prove of interest to the gas industry as a whole.

At the 1920 Iowa District Gas Association Convention the question of co-operating with the Iowa State College in arranging some sort of a short course of particular interest to the gas industry was discussed and a committee appointed to investigate and report. This committee at the 1921 Convention recommended that such a short course be arranged to consider the subject of gas meters. The recommendation was unanimously approved and the committee instructed to carry the matter through to a conclusion. Co-operating with Professor Faber, director of the Engineering Extension Department of the Iowa State College, the committee arranged a program and advertised the course which was held from December 6th to 9th, inclusive. That the idea met with

A. G. A. MONTHLY

the general approval of the gas company managers in this district is shown by the fact that forty-eight men registered representing thirty-two different cities. Thirty-seven men were from Iowa, five from Nebraska, three from Illinois, two from Michigan and one from South Dakota. Letters were sent to every gas company manager in Iowa, Nebraska and South Dakota and to every member of the Iowa District Gas Association, and a copy of the folder announcing the course is given below:

To comply with the requests of a number of gas utilities of the State, the Engineering Extension Department in co-operation with the Iowa District Gas Association will conduct a practical short course for gas metermen at Iowa State College, Ames, Iowa, on December 6, 7, 8 and 9, 1921.

OUTLINE OF INSTRUCTION

The instruction will cover both tin case and iron case meters, and will be so arranged that a proportionate amount of time will be devoted to each.

Following is a brief outline of the subjects to be covered in the course:

1. Purchase, Handling of Meters, Meter Department Records and Organization.
2. Design, Construction and Operation of Tin Case and Iron Case Meters.
3. Meter Installation; Connections and Governors.
4. Lectures and Demonstrations on Major Repairs of Tin Case and Iron Case Meters.
5. Shop Practice on Proving, Adjusting and Repair Bench-work.

The instruction will begin at 8:00 a. m. each morning and will be in charge of practical men; experts in various lines of meter work who are at the same time able to instruct. Lectures, demonstrations and laboratory work will make up each day's work. A great deal of the time will be spent in the laboratory where meters can be proved, adjusted and repaired according to regular shop practice. Discussions which will be a part of the program, will give everyone a chance to talk and valuable suggestions are often gained in this way.

Individual work will be possible to the extent that every one will have an opportunity to prove, adjust and repair meters. Sufficient meters will be provided for this purpose.

Manufacturers will send representatives and furnish meters for demonstrations and inspection so that the metermen will have an opportunity to inspect the various types.

REGISTRATION.

Those who attend this course should register as soon as possible after arrival. Registration will be at the Engineering Extension office, Room 195, Chemistry Building.

PLACE OF MEETING.

All of the lectures and laboratory work will be given in the Steam and Gas Laboratory at the College. The first meeting will be at 10:00 a. m., Tuesday morning, December 6. Advance information as to the probable attendance at this course will be of much assistance to those planning the program, and it is requested that the names of those who will attend be furnished the Engineering Extension Department if possible. All gas metermen interested are welcome to attend.

There are no fees in connection with this course.

The course was made possible by the co-operation of the American Meter Company, the Sprague Meter Company and the Peoples Gas Light & Coke Company of Chicago and the larger gas companies of Iowa. The meter companies sent apparatus, tools and representatives to demonstrate and explain the action and construction of tin-case and iron-case meters and meter testing apparatus. Mr. Geo. A. Lane, Supt. of the Meter Department at Chicago, gave a lecture illustrated by slides and moving pictures on the subject of "Testing and Repairing Tin-Case Meters." This together with his practical demonstrations of many of the operations necessary in repairing tin-case meters, proved extremely valuable to the men attending the course. Messrs. Barrett and Kipschull of the American Meter Company and Mr. Falvey of the Sprague Meter Company, by their untiring efforts contributed much to the success of the course.

In the near future a pamphlet describing the course in detail will be ready

A. G. A. MONTHLY

for distribution, so at this time there follows only an outline of the program without comments. It will be noted that in general the mornings were utilized for talks and general discussions, while the afternoons were devoted to practical bench and prover work. Entertainment was provided in the form of a smoker at the Ames Chamber of Commerce Rooms and the men also met together at an informal nominal priced banquet.

Expressions of opinion by many of the men on the final afternoon meeting indicated that the first course had succeeded beyond our hopes and we now look forward to holding a bigger and better course in 1922.

TUESDAY, DECEMBER 6, 1921

- 9.00 A.M. Registration
- 10.00 A.M. Purchase, Handling of Meters, Meter Department Records and Organization.
Mr. C. N. Chubb, Gen. Mgr., Peoples Light Company, Davenport, Iowa.
General Discussion.
- 1.00 P.M. Design, Construction and Operation of Tin-Case and Iron-Case Meters.
A. T. Barrett, American Meter

Company, Chicago, Illinois; E. C. Falvey, Sprague Meter Company, Davenport, Iowa; D. P. Allen, Supt. of Dist'n, Des Moines Gas Co., Des Moines, Ia.
General Discussion.

WEDNESDAY, DECEMBER 7, 1921.

- 9.00 A.M. Meter Installation, Connections and Governors.
H. R. Sterrett, Engineer, Des Moines Gas Co., Des Moines, Ia.
- 10.00 A.M. Testing and Repairing Tin-Case Meters. (Illustrated by slides and motion pictures.)
Geo. A. Lane, Supt. of Meters, Peoples Gas Light & Coke Company, Chicago, Illinois.
- 1.00 P.M. Shop Practice on Proving, Adjusting and Repair bench work. (Sufficient equipment provided to enable each man attending the course to make tests, adjustments and repairs.)

THURSDAY, DECEMBER 8, 1921.

- 9. A.M. Demonstration of making complete repairs on tin-case meters.
Geo. A. Lane.
Demonstration of making complete repairs on iron-case meters.
E. C. Falvey.
General Discussion.
- 1.00 P.M. Shop Practice.

FRIDAY, DECEMBER 9, 1921.

- 9.00 A.M. Question Box.
Discussion of the Course.
- 1.00 P.M. Shop practice.



Backs M'Fadden Tax Amendment

WASHINGTON, Jan. 16.—Approval was given by Andrew M. Mellon, Secretary of the Treasury, today to a proposed constitutional amendment which would deprive certain Government, State, county and municipal securities of tax exemption. The Secretary appeared before the Ways and Means Committee of the House for a short time while that body was considering a constitutional amendment introduced by Representative McFadden of Pennsylvania, Chairman of the Committee on Banking and Currency, which proposes the change indicated.

While he did not approve the McFadden bill in toto, Secretary Mellon said he endorsed its basic principle, as he, like Mr. McFadden, believed that fortunes were now being invested in these tax-exempt bonds, and thus the holders were escaping large taxes which should properly go to the Government under the income tax laws.

Mr. McFadden was also a witness and stated that it was estimated that approximately \$16,000,000,000 worth of tax-exempt securities had been issued by the Government, the States, counties and municipalities, the amount being divided about equally between the Government and the other political divisions.

Another witness, Philip H. Gadsden of Philadelphia, representing security investments in street railways and like transportation lines, endorsed the proposed amendment.

There will be great opposition to the amendment if it is brought to the floor of the House. Its opponents say it will utterly destroy the value of bonds issued by the States, counties and cities for

building bridges, roads and other improvements. They contend that such an amendment would be an invasion of State rights and in violation of the Constitution.

The most detailed testimony of the day was given by Representative McFadden, who predicted a serious upheaval if a change was not made.

"In the last few years," he testified, "we have seen the personal wealth of the country so rapidly segregated into the tax-free class that whereas the taxable income of individual taxpayers under the Federal Income Tax law was \$992,972,985 in 1916, the amount decreased to \$731,372,053 in 1917 and to \$392,247,329 in 1918. It is not to be supposed that the actual income of these taxpayers had thus decreased. On the contrary, it is a reasonable conclusion that they have converted their wealth into tax-free securities so rapidly that at a similar rate of conversion they would be practically free of all income tax by 1922.

"It has been estimated that more than \$1,000,000,000 of State and municipal tax-free securities were issued in 1920. In that year, if these securities were held by the wealthy, whose Federal income tax was 73 per cent of their total income, the loss to the Government would have been over \$35,000,000 if the interest had averaged 5 per cent.

"Granted that there may have been an apparent saving to the States and subdivisions issuing these bonds of one-half of 1 per cent per annum, the saving on a billion dollars of 5 per cent bonds is only \$5,000,000 a year, or one-seventh the annual loss in taxes.

"Railways, public utilities and other industrial enterprises cannot compete on this basis and are now being deprived of the capital which they need for expansion. This is a serious handicap to normal progress of industry which should be terminated.

"The issuance of tax-exempt securities by the Government, States and political subdivisions, because of the ease of obtaining funds, encourages debt, public extravagance and public inefficiency in expending funds so raised. Furthermore, the bonds for the erection of a schoolhouse or the building of a highway represent capital employed temporarily and therefore unproductive. The same amount of money invested in an industry of permanence and continuous operation is productive in the sense that it insures the permanent employment of labor. Allowed to continue, the issuance of tax-exempt bonds encourages all political units rapidly to approach their bonding limit, when the burden of taxation thus created may become so heavy as to force confiscation of their property.

"As the bonding power of the cities becomes exhausted, their credit position also becomes impaired, and to that extent the credit position of the State also becomes impaired, and in turn that of the Government.

"This proposition to amend the Constitution places all forms of investment on an equal basis of competition and establishes equality and assumption of the tax burden by all people. The prin-

ciples of the Constitution are now being undermined by the inequalities of taxation resulting from the issuance of tax-exempt securities.

"Under this proposal the Government, States and political subdivisions will have equal rights of taxation upon all securities issued by them after its enactment and ratification.

"This proposal will not increase taxes in any manner whatsoever. It will merely change the method and equalize the distribution of the burden."—*Reprinted through the courtesy of the N. Y. Times.*

Commenting on the situation, the New York Times says:

"Investment bankers are watching very closely the fight on the tax-exempt bonds now being conducted in Washington. Should such a measure go through, there is no doubt that it would cause a very wide shift in investment values of the bonds already out, but that it would wreck the values of the tax-exempt bonds outstanding, as some witnesses before the committee have claimed, appears to be a trifle far-fetched.

"By the ordinary course of reasoning, it would appear that such legislation would enhance the market value of the tax-exempt securities already issued, because the further supply would be cut off. Incidentally, dealers say that since the first of January there has been an extremely heavy shift from other issues into straight State and municipal issues."



Experiments at Davenport in the Use of Coal and Coke Mixtures as Water Gas Generator Fuel

IN Technical Paper 284, "Coal and Coke Mixtures as Water-Gas Generator Fuel," by W. W. Odell, gas engineer, just issued by the United States Bureau of Mines, are given the details of studies recently made at Davenport, Iowa, in co-operation with the Illinois State Geological Survey and the Engineering Experiment Station of the University of Illinois, in which very satisfactory results were obtained with the use of coke and Illinois bituminous coal in the manufacture of water gas.

The scarcity of high-grade coke and the great rise in price of all grades of coke have made it almost necessary for some gas companies to consider the substitution of bituminous coal for coke as generator fuel, even though grave difficulties were expected in maintaining the capacity of the plant with the new fuel.

The experiments conducted at Streator, Illinois, by the Bureau of Mines and

the Illinois Geological Survey, in 1918, in operating a 6-foot set six to seven hours a day did not solve some of the important questions in the use of coal fuel, namely, the effect of a stand-over period on capacity and possibilities in the use of the blow-run method of operating with mixed fuels, coal and coke. The chief purpose of the present paper, therefore, is to present information bearing on these problems and the results obtained during six weeks of experiment at Davenport, using mixed generator fuel with the blow-run method of operating. Data are included on the behavior of the various fuels used in the generator, the clinker conditions, the use of fuel high in ash, and on the use of coal high in sulphur.

Copies of Technical Paper 284 may be obtained by applying to the Bureau of Mines, Washington, D. C.

New Members

Manufacturer Companies

- Mr. E. H. Methlie,
S. O. S. Welding Corporation,
236 Sixth Street,
Brooklyn, New York.
- Mr. F. W. Dieterich, President,
Elgin Stove and Oven Company,
14 Chicago Street,
Elgin, Illinois.
- Mr. John E. McMinn, Gen Mgr.,
The Peerless Mfg. Company,
Louisville, Kentucky.

Gas Companies

- Mr. H. C. Schanze, Jr., Vice President,
City Gas Light Company,
839 Asbury Avenue,
Ocean City, New Jersey.
- Mr. Wm. R. Stevens, Secy.,
Lewiston Gas Light Company,
Lewiston, Maine.
- Mr. H. E. Bennett, Secy. & Mgr.,
Cherokee Gas Company,
Cherokee, Iowa.

In Memoriam

WILLIAM H. BRADLEY, Chief Engineer of the Consolidated Gas Company, died suddenly of heart failure, January 18, 1922 in his office, in the Gas Company's building, No. 130 East 15th street. He had been Chief Engineer of the company thirty-six (36) years. Mr. Bradley's body was removed last night to his residence No. 23 West 68th street. It was only a few days ago that he expressed a desire "to die in harness." Mr. Bradley had lived a very active life and had been the chief moving spirit in many very large construction engineering propositions. Although eighty-four (84) years old, he was a daily visitor to his office, where he took delight in studying plans and watching the daily details of the manufacture of gas, and its distribution. Ten days ago Mr. Bradley accompanied by several officers of the Consolidated Gas Company, visited the works of the Astoria Light, Heat and Power Company, at Astoria, Long Island, where he turned the large bar that started the flow of gas into the newly completed 15,000,000 cubic feet gas holder. This was the second holder of that capacity that Mr. Bradley had seen completed on plans and specifications prepared by himself.

Walter L. MacIntosh, the gas company's chief draughtsman, entered Mr. Bradley's private office shortly after four o'clock Wednesday afternoon, Jan. 18, to discuss a drawing with him. Mr. Bradley was just entering his office from an adjoining office room, carrying a small glass of water in his hand. He seated himself at his desk and began to talk to Mr. MacIntosh about his wireless apparatus at his home and pointed to a piece of mechanism that he was going to take home with him in a few minutes to attach to his wireless. He said that his daughter had called him a few minutes before and had spoken about concert music that she had heard over his wireless apparatus. Mr. Bradley then closed his eyes, and Mr. MacIntosh asked him, "Chief, don't you feel well?" There was no reply, and Mr. MacIntosh got up from the chair in which he was sitting, picked up one of Mr. Bradley's telephones, and called Mr. William Cullen Morris, Engineer of Construction, whose office is on the same floor. Mr. Morris was at Mr. Bradley's side in a few seconds, and realizing the situation, called for Dr. Robert L. Irish, of No. 120 East 17th street. Dr. Irish appeared promptly and pronounced Mr. Bradley dead. Word of the death of Mr. Bradley was immediately communicated to Mr. George B. Cortel-you, President of the company, and Vice-Presidents Walter R. Addicks, Robert A. Carter and Charles G. M. Thomas, and to the heads of departments, who remained at the building until Mr. Bradley's body had been transferred to his home.

William H. Bradley was born in New Haven, Conn., on August 25, 1838. He was the son of Charles and Sarah Stanley Bradley. He received a common school education and for several years, while still a resident of New Haven, he served in the mechanical department of a large manufacturing establishment. It was while living in New Haven, in 1859, that he married Elizabeth Whitlock, who survives him. He was then 21 years old, and shortly after his marriage he entered the service of the Continental Iron Works, Brooklyn, N. Y., as construction engineer. At that time that company was actively engaged in the execution of large governmental contracts, among them, in 1862, they were

(Continued on page 123)

GENERAL

CHAIRMEN OF GENERAL COMMITTEES ORGANIZED TO DATE

Accident Prevention—CHARLES B. SCOTT, Chicago, Ill.
Caloric Standards—J. B. KLUMPP, Philadelphia, Pa.
Amendments to Constitution—WM. J. CLARK, Mt. Vernon, N. Y.

American Engineering Standards Committee, Representative on—A. H. HALL, New York, N. Y.

Award of Beal Medal—D. D. BARNUM, Boston, Mass.

Chamber of Commerce, Representative in—CHARLES A. MUNROE, Chicago, Ill., National Councilor.

Cooperation with Educational Institutions—F. C. WEBER, New York, N. Y.

Finance—E. H. ROSENQUEST, New York, N. Y.

Gas Safety Code—W. R. ADDICKS, New York, N. Y.

National Fire Protection Association—W. R. ADDICKS, New York, N. Y.

Rate Fundamentals—R. A. CARTER, New York, N. Y.

Rate Structure—J. D. SHATTUCK, Chester, Pa.

Standard Gas Appliance Specifications—W. T. RASCH, New York, N. Y.

United States National Committee of the International Commission on Illumination, Representative on—HOWARD LYON, Gloucester, N. J.

Nominating Committee—A. P. LATHROP, New York, N. Y.

Bulletin of Abstracts Reduced in Price to \$5.00

The Executive Board has authorized a reduction of the subscription rate of this valuable publication from \$7.50 to \$5.00, at which latter price it is hoped all the old and many new subscribers will take advantage of this offer.

These abstracts are issued bi-monthly and are printed on loose leaf sheets, indexed so the material may be filed for ready reference.

The problem of keeping informed concerning the many matters of value and interest to gas men appearing in the various gas publications is largely solved by the regular use of the Abstracts. They enable you to locate quickly and accurately the source from which information on a particular subject is obtainable and at the same time make available condensed information on such subjects.

Enter your subscription with A. G. A. Headquarters at once and begin immediately to have the advantage of this service.

Engineering Service

The attention of the membership is called to the Engineering Service of this Association. Mr. A. I. Phillips and Mr. N. T. Sellman, of our staff, are available to assist our members in their operating problems, industrial fuel development, situations where rates, calorific standards, or questions of service are involved, or to advise manufacturer members in matters of safety, combustion and general efficiency of appliances.

Where field service is involved there is a nominal charge of \$15. per day

(less than cost to the Association) plus traveling and living expenses.

In order to make this service available to the greatest number of our members any single engagement will be limited to five working days unless the general importance of the matter makes an extension advisable.

The Engineering Service of the Association will not be allowed to encroach upon the field of the Consulting Engineer. It is intended:

(1) *To make available in a practical way and insure to our membership the maximum good from the engineering studies of the committees and staff of this Association.*

(2) *To assist our membership to determine the fundamental points of their problems, and to advise them as to the course they should pursue, in solving them. The Association cannot properly undertake such matters as appraisals or the actual work of improving efficiencies, but where such work is required will so advise and will recommend properly qualified engineers to do it.*

(3) *To enable members to obtain full support of and tangible assistance from this Association in any questions of national importance in which an unfavorable decision might prove detrimental to the gas industry as a whole.*

(4) *To make available expert advice and assistance in promoting the sale and demonstration of industrial fuel appliances and processes. To make surveys of the possibilities of gas as an industrial fuel and for any seasonable uses that will help to make the gas load more uniform and profitable. To advise as to the most efficient method of applying gas to meet local conditions.*

(5) *To assist manufacturing members in interpreting codes, specifications and local ordinances so that their appliances will conform to regulations. To advise in matters pertaining to safety, combustion and efficiency as applicable to gas appliances.*

ACCOUNTING SECTION

EWALD HAASE, Chairman

H. W. HARTMAN, Secretary

J. W. HEINS, Vice-Chairman

MANAGING COMMITTEE—1922

At Large

DAVIDSON, H. C., New York, N. Y.
DOERING, W. A., Boston, Mass.
LAWRENCE, JAMES, New York, N. Y.
MEYERS, W. J., New York, N. Y.
SAUER, W. A., Chicago, Ill.
SCHMIDT, J. B., Baltimore, Md.
SCOBELL, E. C., Rochester, N. Y.
SMART, BURTON, Portland, Me.
STERRETT, W. G., Chester, Pa.
WILSON, P. A., Philadelphia, Pa.

Representing Affiliated Societies

ARMSTRONG, J. J., Toronto, Can. (Canadian)
BORDEN, A. W., Hastings, Nebr. (Iowa)
DEAL, E. C., Springfield, Mo. (Missouri)
HAASE, EWALD, Milwaukee, Wis. (Wisconsin)
HOUGHTON, W. E., Los Angeles, Cal. (Pacific Coast)
HOT, CHAR. W., Glassboro, N. J. (New Jersey)
JAMES, F. M., Aurora, Ill. (Illinois)
McCABE, J. B., Dallas, Tex. (South Central)
NORTON, W. F., Nashua, N. H. (N. E. Gas Eng.)
PORTER, EDW., Philadelphia, Pa. (Pennsylvania)
SCOBELL, E. C., Rochester, N. Y. (Empire State G. & E.)
SHEARON, B. P., Hammond, Ind. (Indiana)
STOTHART, E. C., Charleston, S. C. (Southern)
SWANSON, J. K., Jackson, Mich. (Michigan)

CHAIRMEN OF SECTION COMMITTEES ORGANIZED TO DATE

Continuous Inventory of Fixed Capital—H. C. DAVIDSON, New York, N. Y.

Consumers Accounting—W. A. DOERING, Boston, Mass.

Fire Insurance Rates—P. A. WILSON, Philadelphia Pa.
Standard Classification of Accounts—W. J. MEYERS, New York, N. Y.

State Representative—W. A. SAUER, Chicago, Ill.

A Successful Experiment in Co-operation

CHAS. E. MORRISON, Utilities Mutual Insurance Co., New York, N. Y.

UTILITIES Mutual Insurance Company, which is well and favorably known to the Public Utility interests of New York State, represents, in the truest sense, an experiment on the part of the Gas and Electric Companies in co-operative or group handling of a detail of their business, which in the aggregate absorbs a very substantial sum of money. It has proven, beyond the shadow of a doubt, that the benefits lie in combination and specialization when numerous interests have a similar problem to handle.

Just as, were it possible or advisable, it would produce economies to buy all of the oil that the Gas Companies in the

State use from one producer, so also it has been demonstrated that very large savings may be effected, both actually and expressed in percent of the gross amount received, by having the Public Utilities purchase their casualty insurance from one agency. In the case under review, however, the Gas and Electric Companies were compelled to create their own source of supply.

The more important reasons prompting the organization of Utilities Mutual were, perhaps, three-fold, and of these the most pressing and immediate lay in the fact that the Workmen's Compensation Act, which had just become the law, imposed on every employer the

necessity of providing compensation for his employees (exclusive of farm hands and domestic servants) should they be injured in the course of their employment.

The second was probably due to a pronounced class spirit existing among the Public Utility Companies of the State, especially as represented and crystallized in the Empire State Gas & Electric Association, and in which organization the germ of the idea originated. The law about to become effective was strange to everyone; nobody, not even the inaugurators of the legislation themselves, knew what to expect from the operation of the Act, and this naturally impelled the Public Utilities to pool their interests in an undertaking regarding which they could secure so little practical information from anyone. They felt that they would be no worse off certainly, acting as a group, than as individuals, and that perhaps there might be some advantage in mass action.

Finally, there was dissatisfaction on the part of some of the members with the manner in which the Stock Companies had heretofore handled their Employers Liability and their Public Liability Insurance. Especially was this so under the common law where the defenses of Fellow Servant, Contributory Negligence and Assumption of Risk, might be raised and where the carrier could, unless very careful, wise and familiar with the conditions, seriously injure a reputation, which the company might have been years in building up.

It may be remembered that in 1914, following the lead of Massachusetts two years earlier, the Workmen's Compensation Act became effective in New York, but that differing from its predecessor,

it provided four distinct ways by which compensation for injuries might be guaranteed to, and provided for, the employee. These consisted of:

1. A State Fund, whose function would be to relieve the employer of all liability under the Compensation Act, but which did not provide Employers Liability, nor permit of any other form of Casualty Insurance;

2. Self-Insurance, which enabled a corporation, by pledging securities with the State for the purpose of guaranteeing the payment of losses, to carry its own insurance, and thus act in the capacity of both Insurance Company and Assured;

3. Through the medium of Stock Companies;

4. Through the organization of Mutual Companies for this express purpose.

From a study of these four methods is was quite evident to the Utility interests that they could not accept the first, not only because it savored of municipal ownership, but, from their intimate knowledge of the defects in municipal operation of Public Utilities, they were led to believe that no greater degree of efficiency could be expected from the State in handling this detail of their business. In addition to this, the State Fund was expressly limited to the coverage of Workmen's Compensation, while under certain circumstances the Insurance Carrier might be required to provide Employers Liability as well. The coverage was, therefore, too restricted.

The second method, while possible to only a few of the larger companies, because of the practical requirements in qualifying as a Self-Insurer, was discarded as failing to serve the interests of the industry as a whole.

A. G. A. MONTHLY

Unsatisfactory experience in the past with Stock Companies, particularly in the settlement of claims, undue notoriety, publicity, etc., and the thought that, while there was nothing ventured, on the other hand there was nothing gained, should compensation of Public Utilities prove profitable, stamped the third as undesirable.

It was finally concluded that if a Mutual Company could be organized for the purpose, this form would best serve all interests. It was realized that there was a requisite number of Public Utility Companies to make organization possible under the law, and that once functioning, there would be an adequate "spread" to guarantee a fair average result, both in respect to losses and expenses. This conclusion was strengthened by the thought that as a class the Public Utilities were big enough to stand by themselves and that if losses had to be met the group could absorb them, while if the undertaking enjoyed success, the savings or profits might better be distributed to the Gas and Electric Companies than to those who were not directly interested in their welfare.

Perhaps the greatest element contributing to the initial success of the enterprise was the fact that the industry then had, and has today, a very strong local organization in the Empire State Gas and Electric Association. Indeed, it is very doubtful if there would have been any Utilities Mutual Insurance Company at all without it, and without such personalities as James T. Hutchings, James O. Carr, James C. DeLong, Robert M. Searle, John I. Mange, J. M. Sheehan, F. A. Rogers and Horace E. Andrews, all of whom were among its original incorporators. It will be seen from these

names alone that Utilities Mutual was the outgrowth of a class interest, and it may be stated here that the instinct and judgment exercised in founding this institution has borne fruit bountifully, as the record of the Company will eminently bear witness.

As an example of the temper and conviction of the incorporators, it should be remarked in passing that not one penny was charged against the Company for organization expense, while on the other hand it began business without one cent of either capital or assets. The only obstacle between it and failure was faith and a self-imposed surcharge on all premiums of 10 per cent in excess of what the State permitted as a minimum.

It would seem as though no finer piece of constructive work had ever been accomplished in the interests of the Public Utilities and surely no more generous spirit of co-operation was ever displayed by any group of men.

The Executives of the Company when it first began to function were James T. Hutchings, of the Rochester Gas & Electric Corp'n, President; James C. DeLong, of the Syracuse Lighting Company, Vice-President, and C. H. B. Chapin, of the Empire State Gas & Electric Association, Secretary. The actual operating details were handled through a management agreement with a firm of Insurance Brokers, as it was felt that the business was insufficient to warrant its own organization.

As originally constituted the Company counted less than 100 policyholders in its membership, among which were, however, the following well known Public Utilities:

Rochester Railway & Light Co.
Syracuse Lighting Co.

A. G. A. MONTHLY

Mohawk Gas Co.
Kingston Gas & Electric Co.
Buffalo General Electric Co.
Ogdensburg Gas & Electric Co.
Empire Gas & Electric Co.
Empire Gas & Fuel Co.
Suffolk Light, Heat & Power Co.
Niagara, Lockport & Ontario Power Co.
Ithaca Gas Light Co.
Norwich Gas & Electric Co.
Homer & Cortland Gas Light Co.
Suffolk Gas & Electric Co.
Hornell Gas Light Co.

The total earnings during the initial year of operation were approximately \$150,000, and the form of insurance carried was restricted to Compensation, though the law specifically gave authority for writing other kinds as well.

As time passed, however, and the enterprise continued to make its appeal, it was appreciated that to secure the maximum results with the minimum of expense, the Company should undertake all the functions of management, and with that end in view a general manager was engaged as of January 1, 1917.

Throughout the first year insurance conditions were anything but stable. Rates had been established which, in the judgment of the actuaries, were sufficient to provide premiums large enough to take care of losses and expenses, but, among the inequities was an excess charge against hydro-electric companies. It was maintained by the rate-making authorities that inasmuch as these companies had fewer men on their payrolls than generating companies, and that as the premium was the product of "rate times payroll," the former should pay 50 per cent surcharge over the latter, as in both cases the same hazard of the

electric current was present. This was effective for just one year, but, through the instrumentality of Utilities Mutual, not only was the surcharge withdrawn, but the policyholders were permitted to receive back the excess they had paid, thereby saving thousands of dollars a year to the hydro-electric companies.

As the first year's results showed that the losses due to accidents had been very slight, and the expenses reasonable, it was decided to return to the policyholders as a dividend, 20 per cent of the premiums they had paid in, and later it was determined that an additional disbursement of 20 per cent might be made without impairing the finances of the Company. Thus, whereas some may have joined with slight misgivings, and the hope that everything would be well, the returns at the end of the year were so substantial that few, if any, continued to doubt the Company's ability to operate successfully.

At this time it was thought wise to remove the handicap of the 10 per cent surcharge, and to put the rates at the same level as all others, as it was felt the Company had demonstrated it did not need this added advantage, but on the contrary that it could successfully compete on the same basis and under the same conditions as other Insurance Carriers.

The practice of annually returning a dividend of 20 per cent to the policyholders has been continued to this day, and on March 15th of the current year there will be distributed more than \$150,000 applicable to the year's business of 1921. With the above disbursement, the total returned to Members since July 1, 1914, will amount to \$600,000, and in addi-

A. G. A. MONTHLY

tion the Company will have a Surplus of approximately \$500,000 in hand.

From its inception to April, 1920, Mr. James T. Hutchings, formerly of the Rochester Gas & Electric Corporation, and now General Manager of the United Gas Improvement Company, was President of the Company, and it may be said that he, more than any one individual, helped to establish its policy. It was, in large measure, due to his vision that Utilities Mutual finally decided to admit other than Gas and Electric Corporations, such as Water, Traction and Telephone Companies. It was his wisdom which prompted the Company to enter the adjoining States, and it was through him that the Company concluded it might be equally helpful to the Public Utilities in respect to their Public Liability, Automobile, and Teams Insurance.

It was not until 1919 that these latter forms were written, however, but it is significant of the possibilities, that in the three years ending December 31st, last, the Public Liability business handled has resulted in a saving of \$375,000. It may be stated without fear of contradiction that similar, though perhaps not so large, economies may be effected by the Public Utilities in every line of Insurance which they carry, and they should have the vision to see this and capitalize it.

In the past seven years the Company has gradually extended its operations to the States of New Jersey, Pennsylvania, Maryland and Vermont. This was dictated more from the thought of offering a helpful service than of expanding unduly, and because of affiliations of Member Companies in adjoining states.

As stated above, the first year's business totaled about \$150,000, while the profits amounted to 56 per cent of the

same. In 1921 the Company earned over \$750,000 and saved nearly \$300,000, or 40 per cent of the amount received. As of December 31st last the Surplus of the Company reached nearly \$600,000, while the interest on over a million dollars of investments will provide about one-third of the entire operating expenses. Is not this a substantial showing in a little more than seven years, particularly when we consider that the Company started without one penny of capital, or assets?

That a co-operative plan such as that practiced by Utilities Mutual results in economy needs no argument. Aside from the fact that the Company has annually paid not less than 20 per cent in Dividends, and at the same time added substantially to its surplus, so that savings to date average nearly 40 per cent of the Premiums received, there have been other economies to the policyholders through the operation of what is known as the Experience Rating Plan. By means of this the assured is enabled, within certain limits, to reduce its premium charge if its accidents have been few and inexpensive, whereas it is penalized if its experience has produced many or severe accidents. Thus, as an example, whereas the average credits throughout the State of New York, to all assured, was 5 per cent, during the same period the average credit to all policyholders in Utilities Mutual was 20 per cent, representing a saving of approximately \$100,000 a year.

As a specific demonstration of the operation of the above plan, whereas originally the assured's premium might be represented at \$1.00, this has been reduced to 24c in the current year, less a dividend of 20 per cent, so that today he pays a net of 19.2c

for what he was once paying \$1.00. Is there anywhere else where such reductions have been made in industry?

As a further example of what has been accomplished, a study of the record of one policyholder shows that whereas the premium rate charged in 1914 was \$7.784, in 1922 it is only \$2.663, a reduction of 65.8 per cent, and the average premium per employee has been reduced 44.7 per cent, and this in spite of increased benefits of 100 per cent to certain grades of employees.

The Company attempts to approach all accidents, whether to the employee or to the public, from the standpoint of the intelligent Public Utility executive himself. In other words, it recognizes that the greatest asset the Public Utility has is its good name. When, therefore, an employee is injured it is not a question of "how little" can be done for him, but rather "how much," to bring him back to useful activity, and in the final analysis isn't this "good business"? If superior doctors, hospitals, and nurses are provided, it is true more dollars may be spent in medical fees, but very much less will be expended in compensation costs. In addition the employee will recognize that the Public Utilities Agent on compensation matters is sincerely interested in trying to live up to its "moral" as well as "legal" obligation, and the result is that the injured employee returns to work with at least no malice toward the Insurance Company, and an increased respect for his employer.

Because the Company has largely specialized in Public Utilities it is reasonable to assume that it can be of material assistance to the individual company in its accident prevention work. Thus with experience constantly being

gained from more than 250 Public Utilities, the Company can bring to bear on each problem the sum total of experience gained through the years with hundreds of other plants. Speaking the Public Utility language enables the Company to get the message over more directly, both to the man in the executive's chair and to the man in overalls and jumper.

The writer remembers distinctly the difficulty the Public Utilities used to have, before Compensation became effective, in securing coverage from the Stock Companies, because, as they expressed it, "the Public Utility Companies were too hazardous as a class." It was not so long after, that a representative of one of the largest holding companies in the United States remarked, "If Utilities Mutual has done nothing else it has at least proven that Public Utilities are *not* the hazardous occupations that are generally assumed." Can anyone question that this has been a real contribution to the welfare of the industry? Certainly the credit of the industry in financial circles will be strengthened if it is recognized that the work of the Public Utilities does not involve the dangers and the corresponding accidents expense, usually believed.

Perhaps the most direct contribution to the well-being of the Gas and Electric Companies is, in having helped to vividly demonstrate to the managers that accident prevention pays enormous dividends, not only tangibly in dollars and cents saved in insurance costs, but indirectly in labor turnover and in the welfare of the employees. The latter is quick to perceive if the management is sincerely interested in keeping him a whole man. It builds up the morale of an organization in a way that can hardly

(Continued on page 127)

ADVERTISING SECTION

A. A. HIGGINS, Chairman

B. J. MULLANEY, Vice-Chairman

CHARLES W. PERSON, Secretary

MANAGING COMMITTEE—1922

At Large

BENEDICT, C. M., Charleston, S. C.
BENNETT, J. M., Philadelphia, Pa.
HANLAN, J. P., Newark, N. J.
HUMM, A. W., New York City, N. Y.
INGLE, J. P., Haverhill, Mass.
MURFIT, W. G., Newtown, Pa.
NEWTON, F. A., Jackson, Michigan.
POTTER, CLYDE H., Los Angeles, Cal.
WELSH, W. J., Stapleton, N. Y.
WISKE, F. B., Brooklyn, N. Y.

Representing Affiliated Societies

ALLEN, GEO. W., Toronto, Can. (Canadian)
BURNS, J. J., St. Louis, Mo. (Missouri)
CARRAWAY, LEAKE, Norfolk, Va. (Southern)
CHAPIN, C. H. B., New York, N. Y. (Empire State Gas & Electric Association)
FRANKLIN, S. J., Millville, N. J. (New Jersey)
FUGATE, FRANK, Detroit, Mich. (Michigan)
GOULD, WM., Boston, Mass. (N. E. Gas Eng.)
HARROO, JOHN H., Portland, Ore. (Pacific Coast)
JACKSON, R. O., Chicago, Ill. (Wisconsin)
LESTER, F. M., Chicago, Ill. (Illinois)
ENGLISH, A. L., Council Bluffs, Ia. (Iowa District)
MULHOLLAND, S. E., Fort Wayne, Ind. (Indiana)
ROLSTON, R. J., Philadelphia, Pa. (Pennsylvania)

Tell Your Story

O. D. HALL, Director, Public Utility Information Bureau, Oklahoma City, Oklahoma.

SOME public utility men still hold aloof from the press. They still shrink from laying bare to the public their problems and their plans for betterment of service.

This is not because of a desire to conceal anything but it is the fruitage of the ultra-conservatism of another day now dead and buried forever. This is an age of publicity and the spotlight of publicity has been thrown upon every branch of human endeavor.

Only a few years ago international diplomacy was conducted in secret and treaties were negotiated and sealed by the governments of the nations without the knowledge of the people. Great corporations, and smaller ones too, carefully concealed their operations from the press until they had something to reveal of which they were especially proud and then they carried their message to the press.

Every newspaper reporter who attempted to glean the news from the public service corporations twenty years ago recalls that he often had to take along a crowbar and a charge of nitroglycerine and then he often came back empty handed.

The very words "public service corporation" and "public utilities" convey the idea that the public has a vital interest in these corporations and, therefore, has a right to know what they are doing. Nine out of ten public utility men of today recognize this fact but some of them fail, for various reasons, to establish proper relations with the press.

If their local newspaper "roasts" them or criticizes their rates some utility managers assume at once that the newspaper is their enemy and would not be interested in any of their doings. When a newspaper criticizes a public utility it is sometimes yielding to sentiment expressed by

a group of friends of the editor. At other times it is expressing the sentiment of practically the whole community. Whether this sentiment is based upon justice or upon prejudice it behooves the public utility manager to do something to counteract it. He should spend some intense moments in introspection and if he finds his company at fault in any respect these faults should be remedied, if humanly possible. If he finds that the adverse sentiment is due to prejudice and misunderstanding he should set out at once to remove this misunderstanding by presenting the facts to his patrons.

Even though the local newspaper is unfriendly to his company, the utility operator should not hesitate to place advertising in that newspaper setting forth the facts relative to his business just as the banker, the merchant and the manufacturer advertise their goods and service. This should be done through regular display advertising or other recognized commercial advertising channels.

There is no better medium for this than the local newspaper. If the newspaper is unfriendly the utility operator should not expect the editor to change his attitude because he gives him business. Few editors are influenced in their editorial policies by advertising in their columns and it is right that they should not be so influenced.

The utility operator's chief concern

should be to get the truth to the people of his community regardless of the attitude of the editor. If the people find out that the utility is doing its best to give good service at reasonable rates there will soon be little or no adverse sentiment for the local newspapers to record and it will cease its course of opposition because there will be no opposition sentiment in the community for it to reflect.

The utility operator should not forget that the local editor is always anxious to secure real news, regardless of his personal feelings towards the utility. Most editors will welcome a legitimate news item from a public utility at any time if it is presented to them while it is news and they will print it regardless of their personal attitude. No opportunity to present real news to the local editor should be overlooked by the utility manager but he should be careful not to ask the editor to print mere propaganda. Talk your plans and problems over with your local editor and let him exercise his own judgment as to what is news and what is not news. In nine cases out of ten he will give the utility man a square deal in connection with the matters openly and frankly presented. If at some other time the utility operator finds himself again attacked through the newspapers he should not get "peeved" but come up smiling and continue as before his frank and open-handed policy with the press and his customers.

Cost of Living

Secretary of Georgia Railway and Power Co. has compiled data showing that cost of living in Atlanta, Ga., on December 1 was 64% above July, 1914, figure; clothing was 60% above July, 1914 figure; cost of sundries 80% over that of 1914; cost of shelter 69% over July, 1914. Cost of street railway, gas and electric service in Atlanta shows smallest increase of any item in general cost of living and is now 42% higher than July, 1914.



To Our Customers

Perhaps under circumstances of grave emergency, you have had occasion to turn on the gas in the dark of an early morning hour, *and the service did not fail you.*

Why? Because standing by, like a disciplined army, there is a trained organization of coal passers, stokers, gas house workers, fitters, distribution superintendents, managers and a loyal office staff.

Back of these there are the oil drillers, coal miners and railroad operatives who furnish the raw materials from which gas is made.

The developments of a century of invention and painstaking research of engineers, together with vast investment of capital, have made this service possible—a service that knows neither day nor night, winter nor summer; that goes into the very center of the family circle, right into the heart of the home.

(Insert the name of your Company here)

MEMBER OF THE AMERICAN GAS ASSOCIATION



Good Will Advertisement
Number 22

Neighbor Thompson's Gas Company

IF public utility companies bore the name of the men who manage them, as do department stores, for instance, there would no doubt always have been a better general attitude toward them.

If Thompson's Street Car Company, or the Jones & Smith Heat, Light and Power Company were so named, the man who had a crow to pick with them would usually go straight to see neighbor Thompson or Jones or Smith, as the case might be; and that is a very different matter indeed from writing a letter to some company doing business under the general name of the Brown's Ferry Street Car Company or the Amalgamated Gas and Electric Corporation.

But this is a result not to be achieved—for the great utility companies are not one-man concerns, but are more and more able to say that they are owned by their customers.

Not wholly does the man with money in the bank or in life insurance under-

stand that he is burning his own gas, and riding on his own trolleys; but he is coming to that knowledge, and will come to it all the sooner as the public service companies put their cards on the table and invite him to look at them.

Meanwhile, there are distinct signs of increasing fairness in the attitude of the American people toward these companies. For instance, there is a growing sentiment through the country that the traction lines should be allowed to charge a carrying fare sufficient not only to take care of their fixed charges, but with something left over to provide betterments and extensions.

It is a hopeful sign when a review of the past year shows the public utility question as a whole receiving sane and business-like treatment at the hands of the regulatory bodies in the different states.—*Editorial, Collier's, the National Weekly, Jan. 14, 1922.*

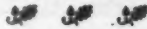
Gus's Gossip in Booklet Form

If you have not read "Gus, the Gas Man's Gossip" which has been appearing serially in the house organ published by the Peoples Gas Light & Coke Company of Chicago, you may now obtain all installments in booklet form by addressing your inquiry to John F. Weedon, of that company.

"Gus," in booklet form, should be read by every gas company employee and should be handed direct to customers who call at the company's office. In Chicago, six hundred people a day are taking "Gus" home with them, and he is making friends by the thousands. Make "Gus's" acquaintance today by writing to Mr. Weedon.

London's Fuel Waste

An Associated Press despatch from London states that the report of the Committee on Smoke Abatement just made public contains the significant statement that three million tons of potential fuel in the form of soot, representing a direct waste of \$30,000,000, escapes into the atmosphere of London annually. The committee report represents the end of an inquiry begun early in 1914 and although no names are mentioned it is believed that the investigation has been under the able leadership of Dr. C. W. Saleeby, the eminent British physician and author, who has been waging a relentless warfare against London's smoke nuisance for several years.



New Chat Ads. Ready

The third series of Chat advertisements was issued to our member companies on December 23rd. If you did not receive proofs of these we shall be glad to send you a set.

Companies are using these little advertisements in a number of ingenious ways and report good results from them. Every three months we issue a set of new Chats in order that our companies may publish them on the average of one each week.

What it is that Customers Find Objectionable

IN its report for the fiscal year of 1921, the Department of Public Relations of the Indiana Public Service Commission says:

"This Department (Public Relations) believes that the greatest service it can render the public is by bringing about a proper relation between the utility on the one hand and the consumer on the other. This relation can only be brought about by informing the consumer of the problems and trials with which the utility must contend in order to give service—problems and trials which are inherent in the very nature of the business conducted by the utility—on the one hand and to convince the utility that every doubt must be resolved in favor of the consumer, on the other; that only the utility which renders adequate service can receive an adequate rate, and that courtesy and forbearance are the accompaniments which alone can render service satisfactory.

"It is highly desirable that each consumer acquaint himself in a general way with the methods of production of the utility products which he is purchasing. The larger telephone companies, realizing this, are encouraging civic and mercantile organizations to visit their plants and are endeavoring to bring to the knowledge of the public an understanding of their work and their problems. This practice is highly commendable and should be used by other utilities.

"In general this Department has found that the public is entirely reasonable in its demands and that the desire of the consumer is for good service, for which he is entirely willing to pay an adequate rate. He objects to paying for adequate

service and receiving service which is inadequate; to discourtesy and to the practice still employed by a few utilities of sending from officer to officer and from department to department, those who desire to make complaints. He objects to standing in line for an undue long time in order to pay his bill. He objects to the reluctance displayed by some utilities to offer explanations of charges that appear to him to be obscure. He objects to the attitude a few utilities still display of believing the consumer incapable of understanding their problems and their difficulties.

"Occasionally, it is true, a consumer takes an unjustifiable and unreasonable attitude and assumes that all utilities are attempting to overcharge him on the one hand and to lower the standards of his service on the other. The number of consumers of this type in comparison to the entire number of consumers of utility products is negligible.

"The experience of this Department has been gratifying in that it has found that utilities generally are aware of the fact that their first duty is to give good service and to satisfy the consumer; they have found that courtesy pays and that no credit is given them for good service unless accompanied by courteous treatment. Many of the larger utilities have established service departments to whom the complaining consumer is directly referred and they have so arranged their collection department that at busy times a larger number of receiving windows is available in order that no customer need waste much time standing in line to pay his bill.

(Continued on page 127)

COMMERCIAL SECTION

A. P. POST, Chairman

WILLIAM GOULD, Vice-Chairman

LOUIS STOTZ, Secretary

MANAGING COMMITTEE—1922

At Large

BEAL, A. R., Newburgh, N. Y.
CAULEY, F. F., Chicago, Ill.
CLARK, J. C. D., Boston, Mass.
CRANE, Wm. M., New York, N. Y.
DAVIES, J. E., Chicago, Ill.
GOULD, Wm., Boston, Mass.
LONG, H. J., New Brunswick, N. J.
MACSWEENEY, J. P., Rochester, N. Y.
POST, A. P., Philadelphia, Pa.
REINACH, H. B., New York, N. Y.
RUTLEDGE, F. J., Philadelphia, Pa.
SCHUTT, H. S., Philadelphia, Pa.
SHATTUCK, J. D., Chester, Pa.
SMITH, DONNET R., Baltimore, Md.

Representing Affiliated Societies

BURKE, E. J., Indianapolis, Ind. (Indiana)
CAMPELLE, E. C., Benton Harbor, Mich. (Michigan)
CLARK, H. H., Chicago, Ill. (Illinois)
CORL, WILEY F., Mexico, Mo. (Missouri)
CRAFTS, H. C., Fittsfield, Mass. (N. E. Gas Eng.)
CRANESBAY, J. WARD, Allentown, Pa. (Pennsylvania)
DOERING, H. A., Mt. Vernon, N. Y. (Empire State)
FLAUTT, J. J., New Orleans, La. (South Central)
FORNEY, JAS. A., Charlotte, N. C. (Southern)
HANLAN, J. P., Newark, N. J. (New Jersey)
JOHNSON, W. B., Toronto, Ont., Canada. (Canadian)
ST. JOHN, JOHN, Madison, Wisc. (Wisconsin)
TAYLOR, W. H., Omaha, Nebr. (Iowa District)
WEISS, FRANK, Los Angeles, Cal. (Pacific Coast)

CHAIRMEN OF SECTION COMMITTEES ORGANIZED TO DATE

Contributions to Monthly—Representatives, Affiliated Societies
Industrial Sales—F. F. CAULEY, Chicago, Ill.
Retail Pricing—
Sales Stimulation—Wm. GOULD, Boston, Mass.

Educational Pamphlets (Sub.)—J. P. HANLAN, Newark, N. J.
Merchandise Advertising (Sub.)—J. E. DAVIES, Chicago, Ill.
Window Displays (Sub.)—

1922 To Be a Year of Intensive Sales Effort

This is your Association and you are an integral part of it. The Association is not in business for profit but solely to benefit its membership and the gas industry generally.

The plans advocated from Association headquarters are the consensus of the best thought of the industry and need your cooperation to make them successful. Let us get our merchandising business under full sway during 1922.

THE Managing Committee of the Commercial Section met at Association Headquarters on January 4th. There were present: A. P. Post, Chairman; Wm. Gould, Vice-Chairman; J. E. Davies, Chicago, Ill.; A. R. Beal, Newburgh, N. Y.; J. D. Shattuck, Chester, Pa.; H. A. Doering, Mt. Vernon, N. Y.; Louis Stotz, Secretary.

It was decided that during 1922 the Commercial Section activities would be confined to subjects of outstanding importance and such as would enable the

Association to render some definite merchandising service to our members.

The subject of SALES is at present the most important subject with which we have to deal and it is planned to give our membership some definite sales help at regular intervals during the year.

Monthly Sales Letter Service

The Committee on Sales Stimulation proposes, therefore, to issue to the membership a monthly Sales Letter in each of which there will be suggested some

A. G. A. MONTHLY

one feature of selling. Members should make a point of keeping this series of sales letters constantly before them. Sales ideas are always worthy of the most careful consideration and your Committee hopes that the suggestions they have to offer in this manner will be a real inspiration to gas companies to intensify their selling effort.

Window Display Book

Through the A. G. A. MONTHLY and in other ways our membership will be assisted in the planning of gas company window and show room displays. There is now being prepared at Association Headquarters a book of displays of various types which will suggest ways and means for planning appliance displays, holiday displays, seasonable uses of gas, etc. This display book will be offered at cost within a few weeks and announcement will be made when it is available.

National Selling Campaigns

The National Sales Campaigns, such as were originally conducted under the auspices of the National Commercial Gas Association, will be revived. It is planned to submit to our membership at an early date plans which if followed should bring about a general resumption of the merchandising activities of gas companies. Such campaigns that will stimulate sales of water heaters, heating appliances, lighting appliances, and industrial uses of gas will be undertaken.

In this connection it is the opinion of those who have been most successful in their gas company merchandising efforts that continuous sales effort in the gas industry is essential to successful results. Spasmodic sales effort is ineffectual in keeping your sales organization

together and in view of the fact that the Executive Board of the American Gas Association has gone on record as advocating that the Sales Department be a permanent one and at least a self-supporting department of the gas company's activity this policy should be carried out by every member company. These Sales Campaigns were always successful in the past and can be made so again.

Educational and Sales Literature

Another sub-committee will devote its energies to the preparation of pamphlets of an educational character for general distribution by companies to their customers. These booklets will be of a popular character and designed to bring about a better public relationship and induce a more efficient and greater use of gas. Syndicated literature of this character can be prepared by the Association at a cost that will enable every company to participate in its local distribution.

Increasing Industrial Sales

The Industrial Sales Committee has in mind the preparation and distribution of Information and Data Sheets covering the utilization of gas for industrial purposes. The service is designed to assist gas companies in getting additional industrial users on their books. These Information sheets will be most helpful and suggestive to the industrial sales representatives for they will not only give him essential facts regarding particular installations but will also suggest classes of business in his territory which might have been overlooked.

The use of Industrial Contracts between gas companies and their large cus-

tomers is again urged at this time. The 1921 Committee Report on this subject offered definite recommendations in connection with this important matter and companies are again reminded of the advisability of having a definite contract with this class of customer. Copies of the 1921 Report are available for the asking.

The Committee has been requested by the Managing Committee to draft a model form of contract based on the suggestions in the 1921 Report and announcement will be made of its completion.

Contributions to the A. G. A. Monthly

A Committee, composed of the representatives of Affiliated Associations serving on the Managing Committee of the Commercial Section, has been appointed whose duty it will be to keep the Commercial Section of the A. G. A. supplied with instructive and helpful articles on various phases of gas company merchandising.

Sales Managers who conduct any successful selling effort are requested to bear in mind that others in our industry may be benefited by knowing about it. This is a reciprocal proposition—tell the other fellow what you are doing and possibly you can get a valuable pointer

from what he is doing. Let us do more of this swapping of sales ideas—it will be helpful to the entire industry and carry out one of the objects of the American Gas Association.

Retail Pricing of Gas Appliances

The retail price of most nationally popular commodities is the same whether you buy in Portland, San Antonio or Boston and this applies to electrical merchandise to a great extent. Do you find the electric washing machine sold at different prices by various classes of dealers or in widely scattered communities. The answer is NO.

This is not the case with gas merchandise, however. We find a certain make of gas range for instance, same type and size selling for varying prices in the same community. The gas company has one price, the department store another and the plumber and small dealer yet another. Usually the gas company's price is the highest of the three. Would it not be helpful were some plan worked out by which the resale price of a certain gas range, for instance, could be made more uniform? This is one of the problems the Commercial Section will attempt to solve this year. If you have any thoughts on the subject send them to Association Headquarters.

Have You Ever Thought of This?

How many gas companies today have any realization of the value of their water heating business and the size of such an unsold market?

Isn't it good business judgment to concentrate on selling gas hot-water heater service to the 5,000,000 prospects now available?

Having sold the public on the advantage of gas for cooking, isn't it equally important to sell the public on the advantages of gas for water heating?

Another Gas Company Opens an Attractive Show Room



The opening of a new and up-to-date Show Room by The Consumers' Gas Company of Toronto is another evidence of the fact that gas companies are realizing more and more the value of attractive display rooms.

We cannot too strongly emphasize the importance of the Show Room as a good will builder and a medium for increased appliance sales. The gas company's offices should be comparable with those of the most progressive merchants in the town and any effort to make them so is money well spent and will bring a manifold return.

ON December 7th, the Consumers' Company of Toronto held an Opening of what is considered to be one of the finest "All Gas" Display Rooms on the continent.

Invitations were sent out and a copy appeared in the daily papers for several days previous to the opening.

The Display Rooms were attractively decorated with flowers and music was furnished by an orchestra stationed in the large corridor.

A fruit punch was served to all the guests by the young ladies of the Sales Department, and visitors were escorted through the show rooms by the salesmen who explained the different appliances.

It was a great surprise to the public to see the wonderful improvements that have been made in gas appliances in recent years, and there were many gratifying comments made, particularly when they entered the Fixture Room.

They were shown a particularly fine display of proper Dining Room lighting, from which they passed into the Living Room with its latest candle-effect fixture with wall brackets over the mantelpiece. There were also a Gas Floor Lamp and a Radiantfire to harmonize with the furnishings. Both of these rooms were furnished as in a modern home, to give the public an idea how these appliances would look in the usual surroundings.

The display includes an "All White" modern Gas Kitchen, which is now so popular with the public.

The size of the Display Room proper is thirty-eight by sixty-five feet, and the Fixture Room is fifteen by twenty-four feet. The Living Room and Dining Room are each twelve by fourteen feet.

The lighting of the main Salesroom is supplied by twelve semi-direct bowls equipped with five mantle kinetic burners, and there are four brackets on each pillar equipped with C. E. Z. burners.



There are over eighty floor connections, which are covered with brass plates when not in use, so that appliances can be connected whenever desired in practically any part of the building.

The Fixture Room has a false open ceiling with an exhaust fan so that the

temperature can be kept comfortable even when all the lights are burning.

The windows in the Living Room and Dining Room have Marquisette curtains with Old Gold Velour drapes. The entrances to the Fixture Room, Living Room and Dining Room are also draped



with Old Gold Velour curtains. The Showroom windows are draped with cream poplin draw curtains with lambrequins.

The outside lighting of the building consists of two standards with two Gas

Arc Lamps to each. Gas is used exclusively in the Showroom, with the exception of the exhaust fan.

The Showroom is heated by water-washed air, which can also be used for cooling the building during the summer.



Making Your Window Bring Business

THE worst possible drawback which a good display can face is a grimy show window. A streaked, dirty or fly-spotted glass subtracts over 50 per cent. from the publicity value of the best of displays. If, then, the point of the display is, itself, the hygienic or sanitary qualities of certain gas appliances, a soiled window spoils all. Display windows must be kept clean, and the task is not hard.

Windows should be washed only when the sun is not shining directly upon the glass, for, if the water dries too quickly, the glass will be streaked and cloudy in spite of vigorous muscular exercise expended in rubbing. A cloudy day is best for the job.

The best tools are a long-handled brush and a rubber cleaner. These may be secured at any hardware store at a small cost.

The water should be clean and free from any sand, for sand or grit will scratch the glass. Very hard water can be softened by the use of a few drops of ammonia.

Dip the brush in the water and start cleaning at the top of the window, rubbing it thoroughly. Then put the rubber cleaner on the long handle and rub the glass dry in long steady strokes from top to bottom. Wipe the rubber clean after each stroke.

To polish the outside of the window use a fine scouring powder. Apply this with a cotton cloth, allow it to dry and then rub it off with a clean cloth. Windows which are thoroughly washed rarely need polishing, however. The powder is not suitable for the inside of the window, as the fine dust from it gets into crevices and corners and is very hard to reach. Tissue paper is the best polisher for the inner surface of the glass. A linen cloth leaves a fine lint. Hence, cotton is more suitable. Soap should never be used as it leaves streaks and makes a great amount of rubbing necessary to clean the glass again.

More Light=Less Gas

THE illustration forcefully depicts a unique display which has been adopted by the New Haven Gas Light Company to teach the value of gas mantle light and the extravagance in the use of gas for light when open flame burners are used. The stand, which is placed in the salesroom window, attracts a good deal of attention and is also used by the gas company in giving instruction at the Home Economics Departments of the public schools of New Haven. The outfit shows that the gas must pass, unlighted, through an open burner placed in an 8-inch chimney. The top and bottom of this glass chimney are sealed with plaster of paris, leaving only the outlet of the top of the chimney for the gas to pass through to three mantle lights. These mantle lights are kept burning to give an absolute demonstration and proof that mantle lights use only as much gas as passes through the one open flame burner. The open flame tip has been adjusted to consume one cent's worth of gas an hour, thus showing that all tree mantle lights can be used at the same cost of one cent an hour.

As this display is easily made up and



as the gas lighting season is upon us, a display of this character by other gas companies will be of undoubted advantages to them in increasing their gas lighting business.



MANUFACTURERS SECTION

JOHN S. DeHART, Jr., Chairman

F. A. LEMKE, Vice-Chairman

PERCY H. HALL, Secretary

MANAGING COMMITTEE—1922

At Large

BRILL, A. P., Pittsburgh, Pa.
CLOW, K. S., Chicago, Ill.
COLLINS, D. J., Philadelphia, Pa.
CRANE, WM. M., New York, N. Y.
DeHART, JR., JOHN S., Newark, N. J.
DICKET, C. H., New York, N. Y.
FERRIS, E. J., New York, N. Y.
GREENE, J. J., New York, N. Y.
GRIEBEL, W. GRIFFIN, Philadelphia, Pa.
KNAPP, F. H., Pittsburgh, Pa.
KOPFER, WM. B., Brooklyn, N. Y.
LEMKE, F. A., Kalamazoo, Mich.
McDONALD, DONALD, New York, N. Y.
ROPER, GEORGE D., Rockford, Ill.
SHERWOOD, J. M., New York, N. Y.
STITES, TOWNSEND, Gloucester, N. J.

Affiliated Representatives

GIBSON, W. R., Toronto, Can. (Canadian)
MILLER, THOMAS D., Detroit, Mich. (Illinois)
WESTON, J. A., Lansing, Mich. (Indiana)
ROPER, GEORGE D., Rockford, Ill. (Iowa Dist.)
SCHALL, H. D., Detroit, Mich. (Michigan)
KELLEY, L. D., Brookfield, Mo. (Missouri)
NORTON, ARTHUR E., Boston, Mass. (N. E. Gas Eng.)
LONG, H. J., New Brunswick, N. J. (New Jersey)
BARTLETT, C. E., Philadelphia, Pa. (Pennsylvania)
SEIDENGLAND, C. H., Dallas, Tex. (So. Central)
SPARKS, F. F., Chattanooga, Tenn. (Southern)
McCULLOUGH, CHARLES, Milwaukee, Wisc. (Wisconsin)

CHAIRMEN OF SECTION COMMITTEES ORGANIZED TO DATE

Exhibition—JOHN S. DeHART, JR., Newark, N. J.
Nominating—GEORGE D. ROPER, Rockford, Ill.
Division of Accessories Manufacturers—J. M. SHERWOOD, New York, N. Y.
Division of Apparatus Works Manufacturers—D. J. COLLINS, Philadelphia, Pa.
Division of Gas Range Manufacturers—WM. M. CRANE, New York, N. Y.
Division of Heating Appliance Manufacturers—K. S. CLOW, Chicago, Ill.
Division of Industrial Appliance Manufacturers—WM. B. KOPFER, Brooklyn, N. Y.

Division of Lighting Appliance Manufacturers—TOWNSEND STITES, Gloucester, N. J.
Division of Meter Manufacturers—DONALD McDONALD, New York, N. Y.
Division of Office Labor Saving Devices Manufacturers—E. J. FERRIS, New York, N. Y.
Division of Water Heater Manufacturers—A. P. BRILL, Pittsburgh, Pa.
Division of Supply Manufacturers—J. J. GREENE, New York, N. Y.

Proposed Standard Specifications for Bench of Sixes

JOHN S. DeHART, JR.

THE Bench Builders Group of the Gas Apparatus Division of the Manufacturers Section presents to the Gas Companies a standard bench of horizontal 6's as shown by cuts on the following pages.

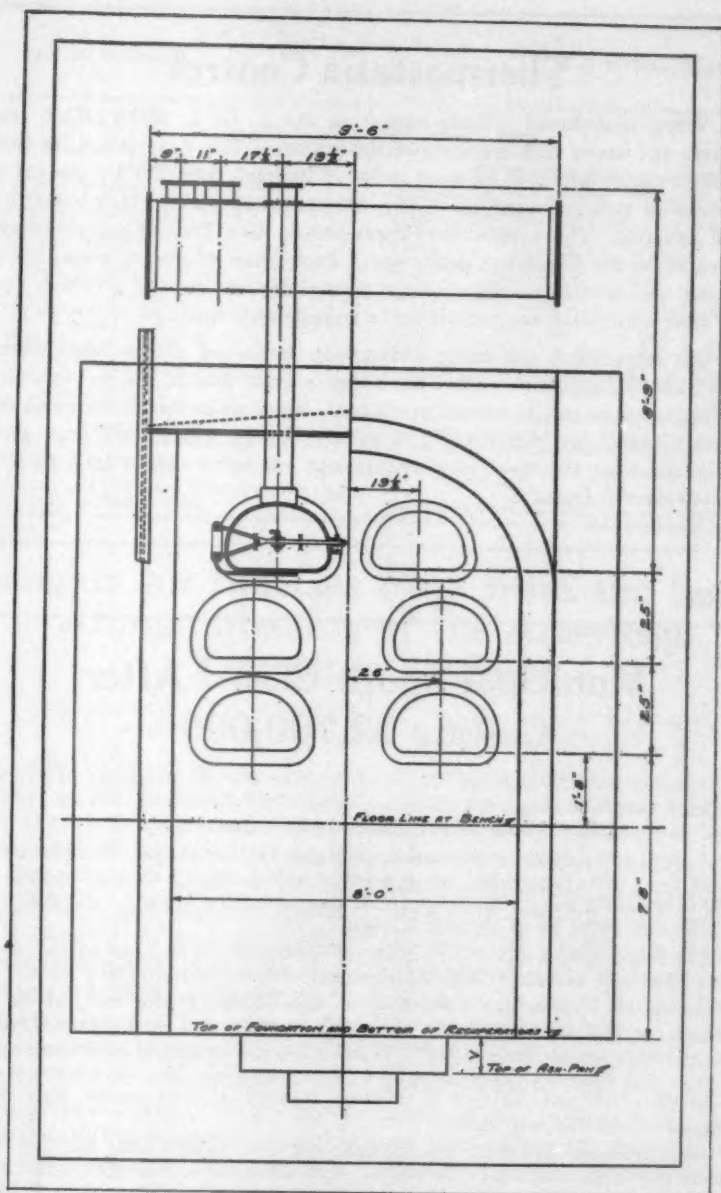
The Bench Builders had several meetings to which each brought a standard design and after a great deal of discussion the various dimensions were taken up one at a time and the cuts show the result of their deliberations.

The reasons for establishing standard dimensions are self-evident and it is desired by the Bench Builders that Gas Companies will co-operate with them by ordering renewals for new construction in accordance with these dimensions as far as possible.

The Manufacturers of ironwork will then be able to attempt quantity production and know that they can move their stocks more quickly.

The Builders will be able to estimate the cost of renewals without so much expense for templets, measurements in the field, etc.





Standard Bench of Sixes
Cut No. 2

Thermostatic Control

When contributed articles appear in the A. G. A. MONTHLY they express the views and opinions of the author. The Association, in publishing articles which it believes to be of interest, does not by the act of publication give endorsement to any statement and views which the article may contain. The article on "Thermostatic Gas Oven Control" which appeared in the December issue, was a description of one of a number of efficient and practicable thermostatic control devices, several of which have met with success on the market for a considerable time.

Gas appliances are being continually improved along "convenience lines" and thermostatic control has added a great deal to the serviceability of the gas range and its ease of operation. Progress in this direction should be encouraged and stimulated and gas appliances which have such great preeminence on the score of economy and efficiency should lack nothing in convenience features.

Municipal Shops Closed After Costing \$2,700,000

Chicago, Jan. 17—Municipal shops which have cost the taxpayers of Chicago \$2,700,000 have been abandoned. Here are some of the reasons why Chicago has let go of its experiment after getting its fingers badly burned:

A water valve, which on the outside would cost \$12, cost the city \$85 in the shops. A bell for a police automobile, which would cost \$8 to \$10 on the outside, cost upward of \$80 at the shops. They charged for time on repairs, whether it was put on or not, and then added on 25 per cent overhead.

The shops charged \$5,113.97 to repair six particular Fords in the course of one year. That is an average of \$852.32—more than twice the cost of a new Ford.

Among the repairs made were those of three Fords. During the year the repairs on one Ford totaled \$1,013.80, on another \$1,083.91, and on the third \$1,183.40. That is an average per Ford of \$1,093.70, and it might be presumed by the uninitiated taxpayer that those Fords would run for years thereafter. But the subcommittee's investigators recommended that all three be disposed of four months after these elaborate repairs had been made.

On a truck the repair bill was \$2,866.76, and three months after that had been paid it was in the shop again for repairs of an estimated cost of \$500. The committee's investigators suggested that truck be replaced.—*Courtesy of the N. Y. Tribune.*

TECHNICAL SECTION

C. N. CHUBB, Chairman

H. W. HARTMAN, Secretary

F. C. WEBER, Vice-Chairman

MANAGING COMMITTEE—1922

At Large

BATTIN, H. S., Philadelphia, Pa.
BROWN, J. A., Jackson, Mich.
COOK, H. R., Jr., Baltimore, Md.
CORNIER, R. C., Philadelphia, Pa.
FIELDNER, A. C., Pittsburgh, Pa.
FREEMAN, F. C., Providence, R. I.
HAFTENKAMP, J. P., Rochester, N. Y.
HARPER, R. B., Chicago, Ill.
HOWARD, A. C., New York, N. Y.
JONES, E. S., Sacramento, Cal.
LUNN, C. A., New York, N. Y.
MACRETE, G. T., Mt. Vernon, N. Y.
SPERR, F. W., Pittsburgh, Pa.
WARING, GEO. H., Grand Rapids, Mich.
WILLIEN, L. J., Boston, Mass.
WING, J. F., Boston, Mass.

Representing Affiliated Societies

BATTEN, J. W., Detroit, Mich. (Michigan)
CHUBB, C. N., Davenport, Iowa. (Iowa)
CORNIER, R. C., Philadelphia, Pa. (Pennsylvania)
DUNN, F. S., Albany, N. Y. (Empire State G. & E.)
ELBERT, V. L., St. Joseph, Mo. (Missouri)
FERRIER, JAS., Atlanta, Ga. (Southern Gas)
HART, J. G., Waukegan, Ill. (Illinois)
HUMPHREYS, J. J., Montreal, Canada. (Canadian)
JOHNSON, G. M., South Bend, Ind. (Indiana)
JONES, J. B., Bridgeton, N. J. (New Jersey)
LYONS, B. F., Beloit, Wis. (Wisconsin)
PAIGE, C. E., Worcester, Mass. (N. E. Gas Eng.)
PAFST, H. M., Portland, Ore. (Pacific Coast Gas)
SEDBERRY, W. H., Marshall, Texas. (South Central)

CHAIRMEN OF SECTION COMMITTEES ORGANIZED TO DATE

Chemical—DR. J. F. WING, Boston, Mass.

Gas Plant and Production—GEO. H. WARING, Grand Rapids, Mich.

Carbonization and Complete Gasification of Coal—
L. J. WILLIEN, Boston, Mass.

Distribution Design—R. C. CORNIER, Philadelphia, Pa.

Thoughts for the Gas Man from the Second Annual Meeting of the American Petroleum Institute

R. B. HARPER and W. H. FULWEILER, Representatives of the A. G. A.
at the Convention of the American Petroleum Institute.

THERE is published in this issue the report of the Technical Committee on Gas Oil which includes a resume of the situation with regard to the present and probable future supply of gas oil. This Committee was originally appointed as a result of the emergency which confronted the industry during the acute oil shortage in 1920 and early in 1921.

Since that time there has been an easing of price and supply of gas oil and according to the Oil Committee's experience, too great an easing of the gas man's attitude toward the possibility of future and continued shortage of the supply available for him. That the Committee from their two years' intimate study of

the situation feel that gas men should still give serious thought to the petroleum situation, is evidenced by their report. Some of our members may feel that the Committee have taken too serious a view of the situation, and for the benefit of such members we are printing below an abstract of statements made by prominent oil men at the Convention of the American Petroleum Institute, held in Chicago, December 6-8, 1921. The statements are worthy of careful consideration as they emanate from a body of men most intimately conversant with the petroleum situation and who will largely control the availability of our chief raw material.

It should be first pointed out that all the statements made by the oil men as to possible exhaustion of petroleum resources refer to the total resources of the world and not to the local resources of the United States. Referring to Mr. O'Donnell's address, his prediction of ample petroleum resources for several generations to come is founded on the premise that the economic pressure which he anticipates *will gradually restrict the use of oil to internal combustion engines and the lubrication of machinery*. In other words, the supply at present available of gas oil will be gradually curtailed as this development proceeds. Also the temporary shortages in supply to which he refers will be accompanied by situations similar to those faced by gas companies in 1920 and early in 1921.

The feeling of the various speakers as to the trend of prices in the future all tend to the same point of a higher price level and seem to be based on the necessities of their own situation. However true their predictions may prove to be in the immediate future, it is quite evident that their own economic development lies along the lines of increasing the percentage of higher priced products and that this course will be followed irrespective of Government regulations, our own objections or any other consideration which they cannot afford to take into account. Certainly with a fixed price for our own product we cannot afford to contemplate violent changes in the price of gas oil which seems to be the least of the difficulties we can anticipate from the situation as it has been outlined at this meeting. Even disregarding the highest prices paid for gas oil during extreme shortage gas men

have in the last decade seen a steady and larger increase in the price of gas oil than of any other gas making material.

Such an established policy of stabilization of the oil industry as recommended by Mr. Walter C. Teagle would, of course, heavily increase the cost of operation of the oil companies and would mean such a higher level of prices as to eventually render uneconomical the use of gas oil in our industry.

Mr. Manning's statistics speak for themselves, and in this connection it should be pointed out that the two Technical sessions of the Institute on Tuesday and Wednesday morning were entirely devoted to the problems of the oil industry related to the quantity and quality of the supply of fuel for the automotive industry. To the solution of this problem quite evidently is to be devoted the main technical efforts of the American Petroleum Institute.

From the gas man's standpoint the general tenor of all the following addresses strongly confirms the conclusion that a far sighted policy requires the reduction so far as possible of a raw material which is regarded by the oil industry merely as a by-product. Particularly when this by-product is considered vital to the development of their own business only insofar as it can be converted in increasing quantities into higher priced products; and which has the additional disadvantage of being subject to the violent price fluctuations which are apparently inherent in the oil business.

The oil men are facing the facts of their own situation and proceeding accordingly. It behooves the gas industry to do likewise, and this is the message that the Gas Oil Committee carry in their report.

Pertinent Statements of Prominent Oil Men

President's Address.

President Thomas O'Donnell states the predictions of exhaustion of petroleum resources of well-meaning and conscientious scientists are grossly exaggerated and while consumption of petroleum in this country may increase to a volume well beyond the possibility of being supplied from our own resources, he would not consider the failure to supply *the entire demand* as a menace to our industrial life. *The most useful purpose to which petroleum can be put is the supplying of fuel for internal combustion engines and the lubricating of machinery.*

Economic pressure adjusted by price fluctuations will gradually increase the production of gasoline from crude and eliminate the use of oil under steam boilers in railroads and by manufacturing plants. Gradually processes of cracking down the heavier parts of petroleum in gasoline are being perfected and *a large part of the 200 million barrels of fuel oil now being used can be converted into gasoline for use in internal combustion engines through improvements in methods and expense of installing plants.*

Temporary shortages can be anticipated due to extreme consumption, but the impression of exhaustion of supply is largely due to reports of oil gushers with large production, followed by reports of their rapid exhaustion. As opposed to this is the stable source of oil supply which is maintained by the old established wells of small but constant production which form in the aggregate the most important source of supply, and which in many instances, have been constant producers for over forty years.

Mr. O'Donnell gave the average production per well in the United States as about 4.7 barrels per day and stated that the present Navy requirements represent less than 2 per cent of the crude oil production of the United States or 4 per cent of the fuel oil available.

Mr. Walter C. Teagle, President of the Standard Oil Company of New Jersey

Mr. Teagle reviewed the current year in the oil industry, particularly as to the possibility of maintaining an adequate reserve supply of oil in storage and the stabilizing of the price level sufficiently to make such storage attractive. Factors which make such stability difficult are stated as:

Ownership of petroleum resources vesting only when oil is brought to the surface which results in compelling early production under ordinary lease obligations.

High investment required for maintenance of a year's reserve supply which was estimated at \$1,250,000,000 for crude storage alone with an annual carrying charge for depreciation, evaporation, taxes, etc., of over \$170,000.

Prohibitive physical difficulty of providing sufficient storage space for a year's supply.

Insofar as these difficulties were not inherent, Mr. Teagle recommends working toward an established policy of stabilization which might include the accumulation of sufficient financial resources to provide a market and adequate storage for surplus oil in seasons of over production or slackened consumption.

A. G. A. MONTHLY

Mr. Edward Prizer, President, Vacuum Oil Company

Mr. Prizer analyzed the political and economic conditions in Europe, as well as the harmful policy of the United States Government with regard to American capital engaged in export operations. He considers the fundamental need of Europe for petroleum products will inevitably increase oil exports. When European conditions return to normal he stated it would not need a great stimulation of overseas industry to drain this country of its present petroleum reserves. In other words, Mr. Prizer anticipates an eventual export demand which with the domestic demand will require the full production of all fields both foreign and domestic.

Mr. Van H. Manning, Director of Research, American Petroleum Institute, —Quantitative Survey of Petroleum Industry

Mr. Manning submitted the following statistics:

<i>Gasoline Production 1919</i>	
Natural Gas Gasoline	20,275,000 bbls.
Straight Run Gasoline	74,545,000 bbls.
Cracked Gasoline	*16,733,000 bbls.

Total	111,553,000 bbls.
Increase in	
Domestic Crude Production 1909-1920...	142%
Gasoline Output	1909-1920...804%
Motor Vehicles	1911-1920...1257%
Domestic Crude	1911-1920...101%

<i>Crude Oil Available per Automobile (Barrels)</i>				
1911	1912	1913	1914	1915
315	219	194	155	115
1916	1917	1918	1919	1920
86	67	58	50	48

10,000,000 cars at present in operation in U. S.
1,500,000 production of cars during current year.

*Cracked represents 15% of total gasoline production.

Mr. Frank Haskell, President, Tidal Oil Company

Mr. Haskell predicts that crude oil will cost more in the future than in the past due to high labor and material cost, the necessity of drilling to deeper producing stratas in fields now under development and the greatly increased cost of transportation of materials into and oil out or regions more remote which are now being opened up and which in the future will furnish an increasing percentage of the world's new petroleum. He states no extended discussion is necessary to convince individuals and companies which are paying the bills in the Mid-Continent field that oil cannot be produced in the future for the average prices which have prevailed in the past. He was optimistic as to an adequate supply providing adequate prices could be secured.

Mr. R. L. Welsh, General Counsel, American Petroleum Institute

Mr. Welsh reviewed the fluctuations in price of crude oil and refined products in its relation to supply and demand from the general rise to the high point of \$3.50 per barrel in 1921, through the period of depression and the recent recovery in prices. Establishes from his figures that such changes all follow directly the law of supply and demand and indicates the prohibitive cost of changing the trend of these prices by any combination of interests such as has been stated on various occasions in the past.

W. H. FULWEILER.
R. B. HARPER.

Report of the Technical Committee On Gas Oil, 1921

W. H. FULWEILER, Chairman, Philadelphia, Pa.

THE Committee has been somewhat handicapped during the past year by the lack of interest on the part of the gas companies in gas oil.

The abundant supplies of oil and the marked lowering in price have served apparently to eliminate gas oil from the list of active problems.

Your Committee does not conceive it to be its duty to indulge in prophecies regarding the future supply and probable price of gas oil, but it does believe that it should, if possible, present what facts it can secure and possibly to indicate some of the deductions which may be drawn from these facts.

Gas Oil Requirements

The gas oil requirements of the indus-

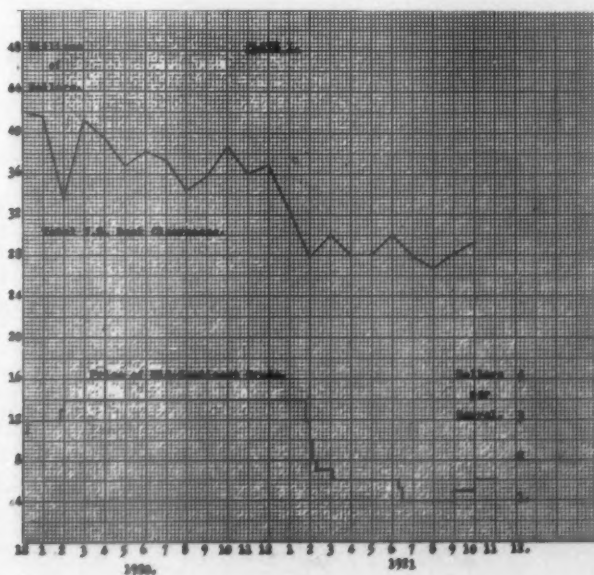
try as determined by the questionnaire sent out by the Gas Association indicate that the industry is using in round numbers 24,000,000 barrels of oil per year.

There have been few changes in statutory requirements that would have any decided influence on the gas oil consumption and with a lower price and ample supply, the demand has continued to increase.

Reasons for Present Ample Supply

It would seem proper to discuss at this point some of the reasons why there has been an ample supply of gas oil and some of the reasons for the present lowered price.

Your Committee in its last report called attention to the fact that there was



A. G. A. MONTHLY

evidence of a decided slackening off in industrial operations and that premiums on crude oil were no longer paid; that drilling was slackening off; but that it did not believe there would be any marked change in the price of gas oil until the price of crude oil has declined. All of these indications developed into actualities.

It would call attention to Plate I which shows the total U. S. bank clearings by months and the price of Mid-Continent Crude oil.

This indicates the rather gradual decline in the bank clearings until the first of the year and then the rather marked drop. It is believed that the bank clearings are indicative in a general way of the industrial activity.

Plate I also shows the marked decline in the price of Mid-Continent Crude oil which took place about the middle of January and which continued until September.

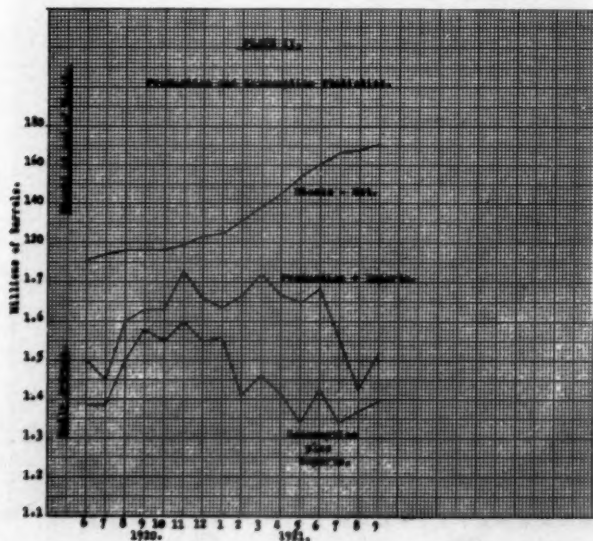
Attention is also directed to Plate II which shows the monthly production of domestic petroleum plus imports and the domestic consumption of petroleum. The rapid decrease in the excess of domestic production plus imports over the consumption was apparently a potent factor in causing the increase in crude oil prices.

These data all point to a very straightforward working of the law of supply and demand and its influence on prices.

The production of petroleum continued at a rather uniform rate, the demand for petroleum decreased. As a result, stocks were increased and the price of crude oil was reduced and there was an ample supply of oil at a lower price.

Domestic Production

In plate II, it will be noted that the domestic production has continued to increase until June. Since then, there has been a slight falling off until the produc-



A. G. A. MONTHLY

tion in September was approximately that of January which is also approximately the same as in January, 1920. This is but a natural reaction to a decreased price.

It will be noted that the lag between the first drop in price and the reduction in production was some 4 or 5 months. This is a rather important factor, as it indicates that a considerable length of time must elapse before production can be markedly varied to meet changes in the demand.

Apparently, the oil operators anticipated the decline in price more than a year ago as will be shown in Plate III. This plate shows that the number of producing wells completed each month started to decline in September, 1920, and that in September, 1921, only 788 wells were completed as compared with 2185 wells in September, 1920, thus showing

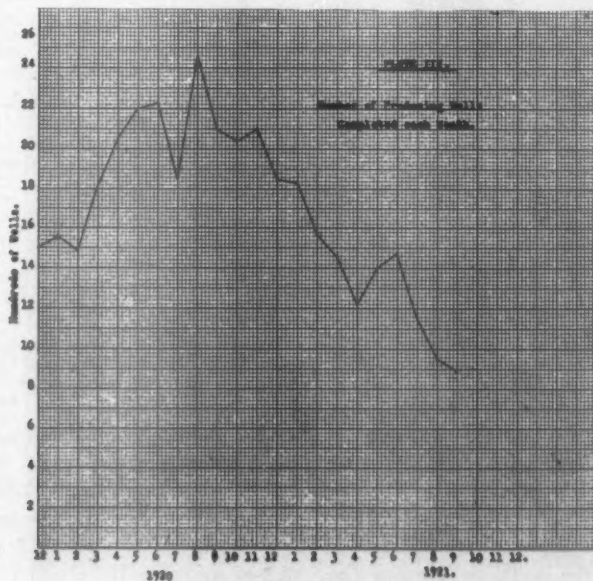
the response that the oil industry makes to existing conditions.

Table I gives the summary of the average daily production from different fields and is interesting in showing the rise of the new fields in Kansas, Oklahoma and Arkansas and the decline in some of the Texas and Louisiana fields.

Mexican Situation

Very recently, opinions seem to have been more crystallized regarding the situation in Mexico.

While we may expect a certain supply of oil from Mexico for a number of years, the influx of salt water into the southern fields has proceeded to such a point that the apparently inexhaustible reservoir of what was thought to be oil has apparently turned out to be salt water and the bulk of the apparent future production is in the hands of



A. G. A. MONTHLY

TABLE NO. 1
DAILY AVERAGE PRODUCTION OF VARIOUS FIELDS

	1910	1915	1920	1921 Oct. 1st.
KANSAS				
El Dorado			42,700	30,000 bbls
Florence				33,000
OKLAHOMA				
Glenn	52,500	16,400		
Cushing		133,400	31,400	26,000
Osage	16,100	23,500	62,300	59,000
Hewitt				45,000
TEXAS				
Humble	6,900	30,300	8,800	7,700
Sour Lake	4,700	11,200	5,300	4,600
Stephens Co.			84,300	59,000
Burkburnette			68,700	45,000
West Columbia			28,200	39,000
LOUISIANA				
Caddo	5,100	6,500	16,300	15,000
Red River-De Soto		8,600	13,800	8,000
Homer			61,700	28,000
Haynesville				11,000
ARKANSAS				
Eldorado				52,000

TABLE NO. 2

IMPORTS OF CRUDE OIL. BUREAU FOREIGN AND DOMESTIC COMMERCE				
Month	Imports Barrels	Topped Oil	Light Oil	Heavy Oil
January	13,192,899	17	61	22
February	11,384,245	15	61	24
March	12,303,114	15	61	21
April	10,043,924	12	61	27
May	9,143,146	17	63	20
June	10,205,255	14	68	18
July	8,046,840	11	74	15
August	3,352,229	3	58	39
September	9,138,456	22	61	17

TABLE NO. 3

COMPARATIVE TOTAL CONSUMPTION OF REFINED PRODUCTS
BARRELS

	1921	First Six Months	1920
Gasoline	54,764,000		51,017,000
Kerosene	22,351,000		24,726,000
Gas and Fuel Oil	104,130,000		95,393,000
Lubricating Oil	8,203,000		12,044,000

a few companies. The cutting-off of this apparently large potential source of supply will undoubtedly have its effect on the supply of oil and its price in the United States as evidencing the change that has taken place in the Mexican situation. The price of Mexican crude oils at the wells in Mexico has

risen from 8 to 10 cents a barrel to 50 to 60 cents a barrel.

The lack of demand in the United States is also an important factor. The actual facts, however, regarding the importations of Mexican oils in the United States during the past 12 months are shown in Table II.

A. G. A. MONTHLY

We may summarize the conditions influencing the supply of crude oil by saying that in response to the domestic reductions in prices, the number of wells drilled have been cut down to about one-third of those being drilled a year ago, and production has been reduced to about what it was in January of this year. The imports of Mexican oil which in January amounted to 13,191,000 barrels have been steadily decreasing and that no new sources of supply, of notable size have been reported.

Future Gas Oil Supply

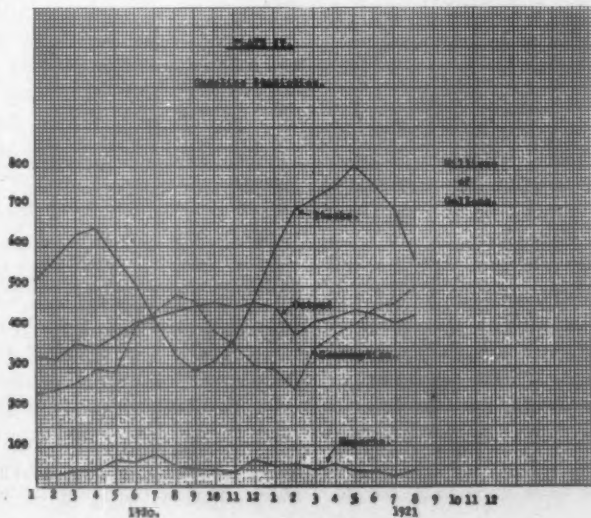
In the 1920 report, your Committee outlined three factors which appeared to them to be important as affecting the available supply of gas oil. These were:

- (1) The demand for gasoline.
- (2) The demand for fuel oil by the Shipping Board, Navy and Mercantile Marine.
- (3) The demand for fuel oil by the other industries in the United States.

We may well consider what changes, if any, have taken place in these three factors during the past year, considering first, the demand for gasoline.

Plate IV gives the data with reference to gasoline during the past two years and indicates that in spite of the industrial depression, the consumption of gasoline has continued to increase although the increase has not been as great in 1921 as it was in 1920 and there seems every reason to believe that with the return of industrial activity, the increase in demand for gasoline, the demand will continue to increase.

The demand for fuel oil by the Shipping Board, Navy and Mercantile Marine in spite of the tremendous slump in shipping has been increasing steadily, June showing 2,778,339 barrels of Bunker oil used against 1,980,963 barrels used in January. Apparently, the bulk of the shipping that has been tied up has used coal for fuel and there appears to be a considerable extension in the active use



of oil-burning steamers. As the bunker oil delivered to vessels engaged in foreign trade was 23 per cent more in the first six months of 1921 than in 1920.

Public Utilities manufacturing electric light and power are steadily increasing their use of fuel oil which in August was equal to 1,144,000 barrels per month.

This leaves the demand for fuel oil by the other industries in the United States to account for the slackening-off in demand which has made the present market in gas oil very much easier.

Table III gives the comparative total consumption of the refined products for the first six months of 1920 and 1921 and shows how the consumption of gasoline and gas and fuel oil have increased in spite of the industrial depression that is indicated by the decrease in lubricating oils.

With the increase in consumption of these two products that has occurred under the existing conditions, may we not ask ourselves what would have been the situation had the industrial conditions been normal, because it is evident that in spite of the industrial depression, the demand for gasoline and fuel oil has shown a very decided increase over last year and the supply of crude oil has not shown any corresponding increase.

Price of Gas Oil

As a result of the economic factors, the price of Mid-Continent Crude Oil has decreased and with it the price of gas oil (the correspondence in prices is shown in Plate V) but beginning in September, the price of crude oil has begun to advance again and at this time, the last week in October, Pennsylvania grades of crude have gone to \$3.50 and

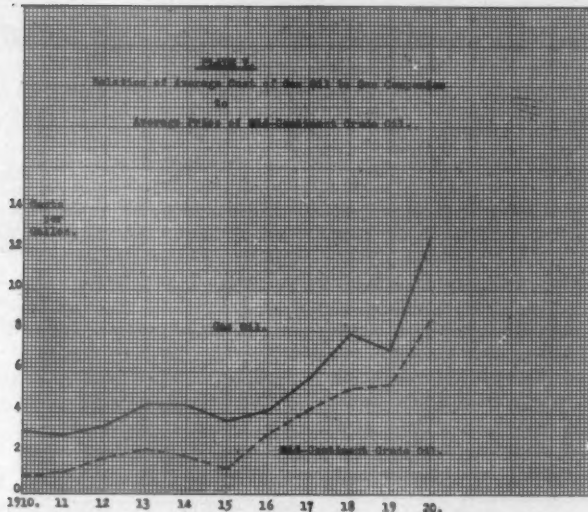
the Mid-Continent Crude have gone to \$1.50 a barrel.

If, as has been the case in the past, the price of gas oil will bear some, fairly close relationship to the price of crude oil, there seems every reason to believe that the price of gas oil has touched its lowest point and will very shortly start to rise again. Quotations for gas oil have been noted in the press as of October 20th, 1921, at 5c per gallon, Atlantic Seaboard, while on October 26th, the same source quotes gas oil at 6¼c per gallon. While such quotations do not establish a market price for gas oil or insure definite quantities at the quoted prices, they do show the trend of prices; while in the cases above quoted show a very rapid rise in a one-week interval.

Future Conditions

While it is true that the stock of crude oil above ground in the United States has increased from roughly 124,000,000 barrels on January 1, 1921, to 171,000,000 barrels on October 1, 1921. This is equivalent to but a little over a month's production, yet the drilling activity of the country has been greatly diminished and experience indicates that it takes several months before drilling is actively resumed after a shut-down. Serious strikes among oil workers are at this writing still under way in California which has reduced this production. There is some evidence of revival in industry as noted in the increasing bank clearings; and there seems every reason to believe that when business conditions commence to revive, in a fairly active manner, the supply of gas oil will again be extremely limited. It seems inevitable, but that there should be a consid-

A. G. A. MONTHLY



erable increase in price over that existing today.

Cooperative Work

During the past year, considerable correspondence was had with the American Petroleum Institute and the U. S. Bureau of Mines looking to the development of some scheme of cooperative work on the Gas Oil question between the American Gas Association and these institutions.

A number of meetings were held and reports favoring such cooperation were presented to the governing heads of the three institutions.

The Executive Committee of the American Gas Association did not feel that they were in a position at this time to cooperate financially with the work and the same opinion was expressed by the American Petroleum Institute.

It is to be regretted that conditions were such that this cooperative work could not have been entered into. It is believed that it is only through such work between the producer and the con-

sumer that the most efficient utilization of our raw materials can be secured.

As a result of arrangements made last year, the American Petroleum Institute furnished through its members a number of samples of representative crude oils to certain members of the Committee. It was the understanding that these samples were to be analyzed and tested in Laboratory apparatus for their efficiency as carburetting agents. Only one member of the Committee has completed his work and attached hereto as an appendix is a most complete report by Mr. E. C. Uhlig on a sample of Pennsylvania crude oil. It is hoped that during the coming year other reports may be completed.

Respectfully submitted,
 W. H. FULWEILER,
Chairman.

Technical Committee:

E. H. EARNshaw,
 R. B. HARPER,
 C. A. LUNN,
 E. C. UHLIG,
 J. F. WING.

A. G. A. MONTHLY

APPENDIX TEST OF PENNSYLVANIA CRUDE OIL

By Mr. E. C. Uhlig

Original gravity at 15.5°C	.8539 or 34°B
Weight per gallon	7.11 lb.
Flash Point	240°F.
Burning Point	285°F.
Sulphur	0.22%
Coke	Trace
Specific Viscosity (Engler) at 68°F. 2.1, at 35°F. 3.1	
B.T.U. per lb.	19,900
B.T.U. per gallon	141,489

Distillation Test

Distillates between, °F.	Volume per cent	Sp. Gr. at 15.5°C
488 & 500	0.50	.8259
500 & 550	4.00	
550 & 600	16.50	.8344
600 & 650	29.50	.8451
650 & 700	26.50	.8561
700 & 750	15.00	.8668
750 & 780	5.50	.8722
Residue & Loss	2.50	

100.00%

The residue appeared to be a light brown oil.

Ultimate Analysis by Mr. O. A. Morhous.

Carbon	82.10%
Hydrogen	13.18%
Sulphur	.49%
Nitrogen) by	
Oxygen) difference	4.23%
	100.00%

Gasification Tests.

Temperature	1300°F	1400°F	1500°F	1600°F
Equiv. gals per M.	3.13	3.12	3.04	3.07
Oil gas c. f. per gal.	58.5	63.8	69.4	78.2
B.T.U. per c. f. gas	591	583	598	568
B.T.U. per gal	109,300	108,600	117,600	109,600
B.T.U. efficiency	77.25%	76.75%	83.11%	77.46%

Gas Analyses.

	1300°F	1400°F	1500°F	1600°F
Carbon dioxide, CO ₂	1.8	1.8	2.1	1.9
Illuminants, Ill	10.9	10.4	10.8	8.6
Oxygen, O	.6	.6	.5	.6
Carbon Monoxide, CO	31.9	32.3	31.2	31.4
Hydrogen, H	32.0	36.1	33.5	37.9
Methane, CH ₄	17.8	15.1	17.1	16.8
Nitrogen, N	5.0	3.7	4.8	2.8
	100.00%	100.00%	100.0%	100.0%
Oil Gas, %	18.3	19.9	21.1	24.0
Blue Gas, %	81.7	80.1	78.9	76.0

Blue Gas Analyses.

CO ₂	O	CO	H	CH ₄	N	B.T.U.
2.2	0.3	40.2	52.3	1.5	3.5	305.

Abstracts of Technical Articles of Interests to Gas Men

Contributed by Sub-committee on Abstracts* of the Chemical Committee

Coke Quenching Apparatus, *Journal des Usines à gaz*, Vol. 45, No. 22; 347, 348, (Nov. 20, 1921). An apparatus for coke quenching that has been in service for a year at the gas plant at Schlieren, Zurich, Switzerland, is described. The interesting feature is the provision of a waste heat boiler for recovering the heat from the hot coke. (E. L. Hall)

(Following Abstracts selected from Chemical Abstracts by E. C. Uhlig)

TECHNICAL GAS ANALYSIS, BASED ON THE MEASUREMENT OF THERMAL CONDUCTIVITY.

By M. Moller, *Wiss. Veröffentl. Siemens Konzern* 1, 147-53 (1920). A method of technical gas analysis, especially for the detn. of H , CO_2 , and CH_4 , is based on the difference in the respective thermal conds. of certain gases. CO , N , and O are not differentiated from one another by the method, which is based upon the different cooling effects experienced by two exactly similar heated wires containing resp. within one of two exactly similar very narrow cylindrical metal chambers and surrounded resp. by the gas to be investigated and a standard gas (cf. CA. 14, 1500, 3029). Air, or the gas under investigation, freed from the impurities, may be used as standard gas. Convection effects are eliminated as far as possible. The two wires constitute two arms of a Wheatstone network in which a constant elec. current is maintained, and the galvanometer scale is calibrated so that the deflection gives directly the percentage of one constituent present. The method is applicable only to gases contg. known constituents. With a portable ap. a detn. of H in air can be made in 2-3 secs. The method can be used for indicating and controlling the combustion in furnaces at a distance. J. S. C. I.

The Corrosion of Old Iron. By E. A. Richardson and L. T. Richardson, *Trans. Am. Electrochem. Soc.* 39 (preprint); *Chem. Met. Eng.* 24, 842 (1921). Analyses are tabulated of 15 specimens of Fe and steel which have been subjected to atm. corrosion, in some cases for as much as 35 years. Five contg. over 0.10% Cu were in good condition, while of 10 contg. less than 0.10% Cu, 5 were in fair to good condition and the remainder in poor condition. Comparative tests, over a period of two years, of old and of recently made Fe of about same Cu content show the former has no greater rust-resisting characteristics than the latter. (W. H. Boynton)

The Cause of Corrosion of Steam Boilers. By G. Paris, *Chaleur et industrie*, (May, 1920); *Rev. Gen. Elec.* 9, 182-5 (1921); *Science Abstracts* 24B, 108. A summary of investigations in the Lab. of Paul Kestner in Paris on boiler corrosion. P. discusses the subject from both the theoretical and practical standpoints. The dissolved gases and not the salts of the feed-water are the real cause of internal boiler-plate corrosion. When the dissolved O and CO_2 are eliminated from the water before it enters the boiler, the internal corrosion of the boiler almost entirely ceases. The usual method of removing the dissolved O by preheating the feed-water was investigated, and found ineffective as a means of removing all traces of the gas; and the passage of the feed-water through a series of vessels contg. Fe. turnings specially prep'd. for the purpose of removing the O was requisite, in order to achieve the objects aimed at. The conclusions are that the complete removal of the O from the feed-water paralyzes the corrosive action of both CO_2 and dissolved salts, and that this removal of the dissolved O can be cheaply effected by the method described. Cf. *Perdrizet* (*Rev. gen. Elec.* 9, 185-7 (1921). H.G.

*Abstractors' names appear in parentheses following each item.

- Rusting of Steam Boilers.** By G. Bruhns, Z. Angew. Chem. 34, Aufsatzteil, 231-2 (1921). The boiler tubes were fed with an untreated, brackish water from a peaty soil, mixed with an overflow from a nearby cesspool. In addition to Ca salts the water contained appreciable amts. of sol. nitrates and humic acid. The pptn. of CaCO_3 and elimination of CO_2 on heating left the water sufficiently acid to cause a reaction between the nitrates and humic acid, resulting in the formation of a small amount of free HNO_3 , which attacked the boiler tubes and walls, HNO_3 and NH_3 being formed. The decomposition products of humic acid or their Ca salts have a dark reddish brown color, and gave an exaggerated idea of an accelerated corrosion which was not found on actual inspection of the boiler walls. (W. A. Mudge)
- Unusual Boiler Tube Corrosion by Carbon Dioxide.** By Barzillai G. Worth, Trans. Am. Electrochem. Soc. 39, preprint (1921); Chem. Met. Eng. 24, 843 (1921). A steam boiler corroded rapidly and resisted all attempts to protect it electrolytically. Finally the trouble was located as due to soluble Fe bicarbonate in the water used, which gave off large quantities of CO_2 when heated in the boiler. The water was then treated by keeping it at the b. p. 8 hrs. in a pre-heater, where the CO_2 was liberated and a sludge of $\text{Fe}(\text{OH})_3$ pptd. The trouble then ceased. (J. W. R.)
- Determining Tank Capacity or Contents.** By W. F. Schaphorst, Textile World 60, 687 (1921). A logarithmic chart for computing gallons, pounds, tons and cu. feet of H_2O in rectangular tanks, is given. (Chas. E. Mullin)
- The Flash Point of Lubricating Oils.** By C. M. Larson, Sci. Lubrication 1, No. 3, 14-17 (1921). A discussion of the flash test including a history of its development. Too much reliance must not be given to the results obtained as they are frequently a false index to the distn. range and evapn. rates of oils tested. (D. K. French)
- Chemistry of Oil.** By W. F. Parish, Sci. Lubrication 1, No. 3, 30-33 (1921). Relates to the development of various oil testing methods from 450 B. C. to date. (D. K. French)
- Contributions on the Increase of Ammonia Formation in the Distillation of Coal. The Recovery of Hydrocyanic Acid in Coke-Oven Gas by Transforming it into Ammonium Sulfate.** By Friedrich Somer, Stahl u. Eisen 41, 852 (1921). HCN may be hydrolyzed by acids or alkalies. With alkalies it behaves as a nitrile giving ammonia and alkaline formate; with acids it is hydrolyzed first to formamide and then further to formic acid and ammonia. The hydrolysis by H_2SO_4 can be used commercially to change the HCN of coke-oven gas to $(\text{NH}_4)_2\text{SO}_4$. The best results are obtained with 60° B'e. acid and not too high a temp. H_2S aids the hydrolysis. Expts. are given showing the effect of impurities and various types of app. on the hydrolysis. The author concludes that by making certain additions, which are described, to the scrubbers the HCN can be recovered as $(\text{NH}_4)_2\text{SO}_4$ without extra expense. (R. S. Dean)
- Thickness of Wet Paint Films.** By A. H. Pfund, Johns Hopkins Univ. J. Franklin Inst. 191, 517-23 (1921). A new app., the "Paint Film Gauge," has been devised to measure the thickness of films of wet paint; the accuracy attainable is better than 3%. (Joseph S. Hepburn)
- Viscosimeter Calibration and Conversion Chart.** Anon. Lubrication 7, No. 5, 5-8 (1921). Calibration of the Saybolt Universal No. 20, Saybolt Furoil No. 32, Redwood Standard No. 1326, Redwood Admiralty No. 737, Engler No. SR-2607, and Barbey instruments makes it possible to convert from one to the other and to absolute kinematic viscosities. The instruments were calibrated by the use of alcohol-water mixts., castor oil, glycerol-water mixts., and mineral oils, the last having been measured on the Barbey viscosimeter. The Barbey instrument is the only one which gives a linear relation between its readings and the kinematic viscosity. However, different Barbey instruments do not have the same instrument constant; this may be due to its being standardized with raw rapeseed oil at 35° to give a reading of 100, which is hardly a fixed standard.
- Constant-Temperature Baths.** "Omega." Chem. Trade J. 69, 30 (1921). A list is given of 15

mixts. for constant-temp. baths and requiring little attention for boiling temps. from 40° to 300°. For the lowest temp. a mixt. of 98% EtBr and 2% EtOH is used and for the highest temp. 90% cottonseed oil and 10% beeswax.

The Prevention of Rust. By P. Martell, *Chimie et industrie* 5, 328 (1921). Review *Neueste Erfind. u. Erfah.* 47, 43-7 (1920); of modern processes for the protection of Fe against rust.

The Determination of Tar, Dust and Water in Generator Gas. By E. Jenkner, *Stahl u. Eisen* 41, 181-3 (1921). The tar and dust are pptd. in a hot tube filled with small glass tubes; the water and some of the tar pass through to a similar cold tube where the remainder of the tar precipitates, the water is absorbed in CaCl₂. Details are given.

Methods for Measuring Large Volumes of Gas, Especially Applicable to Gas Plants or Coke Ovens. By C. Berthelot, *Rev. metal.* 17, 668-76 (1920). B. describes briefly, giving advantages and disadvantages, the methods for measurement by means of a gasometer, by the Pitot tube, by the Lecoq method which is based upon the detn. of the exact. vol. of air admitted to the furnace for combustion of the gas, of the vol. of gas drawn out by the exhauster, of the NH₃ in the gas and in the wash water, and at some length, the Murgue method which is based upon the measurement of the loss in pressure caused by a diaphragm inserted in the gas main, the difference in pressure on the opposite sides of the diaphragm being measured by a manometer. The app. is very exact, measuring variations within 0.01 mm.

Gas Flow Measurement. By Noah D. Lambert, *Am. Gas J.* 115, 95-7; 105-10 (1921); 12 figs. A discussion of the various methods that are recognized as standard in the measurement of gas. Gas meters are classified in 4 ways; (1) method of showing measurement; indicating, recording and integrating or any combination of these; (2) capacity for measuring; (3) precision; (4) type, as volume, velocity and heat capacity. The principles of various examples of these 3 types are discussed.

Automatic Regulation of Pressure of Town Gas. By G. Frere, *Soc. Tech. Du Gas. Gas. J.* 155, 99-100 (1921); 1 fig. Modifications made to an app. previously described (*J. Gas Lighting* 91, 177-8, 1905) are shown. It insures const. pressure throughout the system of gas mains whatever be the variation in consumption.

Automatic Long-Distance Gas-Pressure Recorder. By F. Greineder, *Gas und Wasserfach* 64, 261-3 (1921). A detailed description with diagrams of the Bamag pressure recorder is given.

Automatic Safety Gas Cut-off. By A. Grebel, *Soc. Tech. du Gas. Gas J.* 155, 99 (1921); 4 figs. The app. described is a safety device for attachment particularly to the meter for cutting off automatically the supply of gas when the pressure fails or when a break in the connection occurs. It works on the hydrostatic principle of filling and emptying of a syphon similar to those used in CO₂ records. The trapping liquid consists of water containing 20% of glycerol. It is simple in operation and does not get out of order easily.

Gas Quality and Lighting Efficiency. By E. Terres and H. Straube, *Gas und Wasserfach* 64, 309-14, 329-36, 348-54 (1921). An investigation was made of the lighting efficiencies of both upright and inverted incandescent gas burners with straight coal gas and mixts. of it with 10, 20, 30, and 40% of water gas, producer gas, lignite gas, waste gases with 20%, CO₂ and 80%N, and with air, at pressures of 30, 40, 50 and 60 mm. water column. The compn. and sp. gr. of the various gases used are given and the amt. of primary aeration is discussed and the effect of this primary aeration upon the mean horizontal candle power of the upright burner.

Woodall-Duckham Chamber Ovens for Continuous Gasification. By Heinrich Lininger, *Z. Ver. Gas-Wasserfach* 61, 41-3, 55-8 (1921). The ovens are described in detail as is also the water-cooled coke discharger which delivers the coke in an intact, dry state with a temp. of 40-50°. The advantages are as follows: (1) the gasification is carried out under the most ideal and uniform conditions; (2) the yield of tar is

about 15% and of NH_3 , 10% more than with horizontal ovens; (3) the gas, having only a short contact with heated surfaces, is almost free from naphthalene and S; (4) the coke is of excellent condition, completely dried and cooled and practically devoid of breeze; (5) fuel consumption is very low, loss in the coke is nil and radiation is at a minimum; (6) the ovens are always closed during operation, the charging being done into a holder separate from the retorting space, consequently there are no losses of gas or trouble with smoke; (7) long ascension pipes are avoided, stoppages from tar and pitch are rare; (8) labor requirements are small; (9) the construction is simple, strong and gas-tight, and cost as well as upkeep is low.

Economy in Vertical-Oven Operation at the Modling Gasworks. By H. Brook, *Z. Ver. Gas-Wasserfach* 61, 52-5 (1921). Operation of the Dessau type of oven described. With steaming from 1 to 1.5 hours, 350-360 cu. m. of gas per ton of coal are produced; calorific value 4800-5000 cal. Firing consumes about 15-16% of the gasified coal. The yield of tar is about 55 kg. and of NH_3 , 2.6 kg. per ton of coal. Labor requirements are small and repairs low.

Utilization of Spent Oxide from Gas Works. By P. Waguët, *Inst. Agr. intern. Beauvais. Rev. Prod. Chim.* 24, 397-404 (1921). Outline of the compn. of spent oxide, of the methods of extg. S, and of prep. $(\text{NH}_4)_2\text{SO}_4$, $\text{K}_4\text{Fe}(\text{CN})_6$, KCN, and Prussian blue, and also of the advantages and limitations of its use as a fertilizer, for destroying weeds and as an insecticide.

Benzene Recovery in Medium and Small Gas Plants. By H. Menzel, *Gas und Wasserfach*, 64, 294-6 (1921). The Bamag type of benzene-recovery app. is particularly suit-

able for small gas plants. It is simple in type, inexpensive to construct and operate, washes the gas of naphthalene and benzene simultaneously with a considerable saving in wash-oil. The economic phases of gas-washing are discussed.

Determination of Naphthalene in Tar and Tar Oil. By R. Mezger, *Gas und Wasserfach* 64, 413-16 (1920). M. reviews some of the methods found in the literature but discards them all in favor of Glaser's picric acid method and describes a slight modification of it. Instead of using air as the carrying medium of naphthalene, lighting gas, previously freed from CO_2 , NH_3 , and naphthalene, is passed through the app. at the rate of 25 l. per hr. The test lasts for $3\frac{1}{2}$ hrs. The cork stoppers of the flasks are replaced by ground-glass stoppers. The whole of the picric acid soln., instead of only an aliquot portion, is used together with the washings of the filter. H_2PO_4 instead of H_2SO_4 is used to prevent any splitting off of SO_2 , and to be sure that no acid vapors get into the picric acid the gas is washed with caustic potash between the Engler flask and bulb tube. In order to obtain a uniform heating, a water bath is used instead of the air bath. By this modified method, all of the naphthalene can be converted into picrate and a more satisfactory detn. made than by the original method.

Repeated Shut Downs of Coke Ovens. By J. M. Hastings, Jr., *Iron Age* 108, 73-4 (1921). H. shows, by reference to the plant of Semet-Solvay ovens at Benwood, W. Va., which has been closed down several times since its construction in 1898, that, contrary to general public opinion, a correctly designed and a properly constructed plant can be shut down completely without serious injury and without extraordinary labor or heavy repair expense on starting up.

"Fuel Facts and Fancies," an article in the January 14th issue of the AGE-RECORD by Mr. Parsons, and the outcome of an interview the author had with Mr. Fogg, is something every gas man should read. Apart from this it would be particularly enlightening for the individual who knows little of this industry. It is frank enough, serious enough, and promising enough, in its outlook on this business to lend interest and understanding to the most hardened antagonist.

Associations Affiliated with A. G. A.

Canadian Gas Association

Date of Affiliation—Mar. 25, 1919
 Pres.—C. S. Bagg, Montreal Light, Heat & Power Co., Montreal, Que.
 Sec.-Tr.—G. W. Allen, Consumers' Gas Co., Toronto
 Conv., 1922

Empire State Gas and Electric Association

Date of Affiliation—Nov. 21, 1919
 Pres.—E. H. Rosenquest, Bronx Gas & Electric Co., Bronx, N. Y.
 Sec.—C. H. B. Chapin, Grand Central Terminal, New York, N. Y.
 Conv., 1922

Illinois Gas Association

Date of Affiliation—Mar. 19, 1919
 Pres.—H. H. Clark, 325 Peoples Gas Bldg., Chicago, Ill.
 Sec.-Tr.—R. V. Prather, 305 Illinois Mine Workers Bldg., Springfield, Ill.
 Conv., Hotel Sherman, Chicago, Ill., Mar. 15-16, 1922.

Indiana Gas Association

Date of Affiliation—April 24, 1919
 Pres.—Morse Dell Plain, No. Indiana Gas & Elec. Co., Hammond, Ind.
 Sec.-Tr.—E. J. Burke, Citizens Gas Co., Indianapolis, Ind.
 Conv., 1922

Iowa District Gas Association

Date of Affiliation—May 21, 1919
 Pres.—C. N. Chubb, United Light & Rwy. Co., Davenport, Ia.
 Sec.-Tr.—H. R. Sterrett, Des Moines Gas Co., Des Moines, Ia.
 Conv., 1922

Michigan Gas Association

Date of Affiliation—Sept. 18, 1919
 Pres.—J. A. Brown, Hodenpyl, Hardy & Co., Jackson, Mich.
 Sec.-Tr.—A. G. Schroeder, Grand Rapids Gas Light Co., Grand Rapids, Mich.
 Conv., 1922

Missouri Association of Public Utilities

Date of Affiliation—June 18, 1920
 Pres.—H. Spoehrer, Union Elec. Lt. & Pr. Co., St. Louis, Mo.
 Sec.-Tr.—F. D. Beardslee, 315 N. 12th St., St. Louis, Mo.
 Wiley F. Corl, Chmn. Affiliation Com., Missouri Utilities Co., Mexico, Mo.
 Conv., 1922

New England Association of Gas Engineers

Date of Affiliation—Feb. 19, 1919
 Pres.—Burton Smart, Portland Gas Lt. Co., Portland, Me.
 Sec.-Tr.—J. L. Tudbury, Salem Gas Light Co., Salem, Mass.
 Conv., 1922

Gas Sales Association of New England

Date of Affiliation—Oct. 1, 1919
 Gov.—H. J. Pettengill, Jr., Blackstone Valley Gas & Electric Co., Pawtucket, R. I.
 Sec.—M. Bernard Webber, 150 Congress St., Boston, Mass.
 Annual Meeting, 1922

New Jersey Gas Association

Date of Affiliation—April 25, 1919
 Pres.—H. H. Newman, Public Service Gas Co., Trenton, N. J.
 Sec.-Tr.—H. E. Mason, Consolidated Gas Co. of N. J., Long Branch, N. J.
 Conv., 1922

Pacific Coast Gas Association

Date of Affiliation—Sept. 18, 1919
 Pres.—Henry Bostwick, Pacific Gas & Electric Co., San Francisco, Cal.
 Sec.-Tr.—W. M. Henderson, 812 Howard St., San Francisco, Cal.
 Conv.—Santa Barbara, Cal., September, 1922.

Pennsylvania Gas Association

Date of Affiliation—April 10, 1919
 Pres.—E. L. Smith, Towanda Gas Co., Towanda, Pa.
 Sec.-Tr.—Geo. L. Cullen, Harrisburg Gas Co., Harrisburg, Pa.
 Conv., 1922

South Central Gas Association

Date of Affiliation—Oct. 15, 1919
 Pres.—Frank L. Weissner, San Antonio Public Service Co., San Antonio, Texas.
 Sec.-Tr.—S. J. Ballinger, San Antonio Public Service Co., San Antonio, Tex.
 Conv., 1922

Southern Gas Association

Date of Affiliation—May 20, 1919
 Pres.—L. I. Pollitt, Southern Gas & Electric Corp., Lexington Bldg., Baltimore, Md.
 Sec.-Tr.—G. H. Smith, City Gas Co., Norfolk, Va.
 Conv., Greensboro, N. C., May 16-17-18, 1922.

Wisconsin Gas Association

Date of Affiliation—Mar. 25, 1919
 Pres.—J. P. Pulliam, Wisconsin Public Service Co., Milwaukee, Wis.
 Sec.-Tr.—Henry Harman, 182 Wisconsin St., Milwaukee, Wis.
 Conv., Hotel Pfister, Milwaukee, Wis., Mar. 22, 23, 24, 1922.

QUESTION BOX

ACCOUNTING PROBLEMS

- A-18** What has been worked out as established practice in the matter of selling appliances on payments? That is the amount that must be included in selling price to cover cost of carrying payments, the discount given for cash, whether that discount and loading is varied according to the number of months that the payments cover, practice as to commutation of payments, etc. Also what has been worked out as to the best size for the first payment, should it be smaller, larger, or approximately the same as the monthly payments.

ANSWERS

Mr. Alfred P. Post, Gen. Mgr., Interstate Appliance Corp., Philadelphia, Pa.

Tag all merchandise at the cash price. When sold on the installment plan add ten percent to the cash price and exact a payment of twenty percent on the installment price as a cash down payment. (Twenty percent will be found to cover storeroom expense, delivery charge, and in the majority of cases, also installation costs.) Monthly payments for the balance may be spread over periods best adapted to fit in with the amount of the sale, and the ability of the customer to pay. In our own practice, twelve months is the maximum period over which credit is extended.

Mr. C. D. Fullerton, Assistant Treasurer, Portland Gas Light Co., Portland, Me.

It has been the custom in this Company to collect 20 percent of the selling price of the appliance when sold and the balance of the payments in six monthly installments except in the case of special campaigns on fixtures when in some cases we have sold them on twelve monthly payments.

Mr. Isaac S. Hall, Charles H. Tenney & Co., Boston, Mass.

It is an established practice of our associated companies to sell appliances on a monthly payment plan, the time extending over a period of from three to sixteen months, depending upon the value of the appliance. Six to ten percent is added for carrying charges.

The amount of first payment varies, according to the value of the appliance and the sales plan. In some sales campaigns we have eliminated the first payment, and used the sales policy, "no money down and a whole year to pay."

In order to get the maximum amount of business during these times, it is absolutely necessary to make it as easy as possible for the customer to purchase, that is, small payment down and small monthly payments over a long period.

Mr. W. H. Barton, Portland Gas & Coke Co., Portland, Ore.

Terms of Payment.

Practically all of our gas appliances and merchandise sales other than merchandise or repair parts sales are on the installment basis. Small appliances such as single mantle lights, hot plates, fixtures, etc., are sold on the basis of three equal installments. Practically all house heating appliances such as hot air furnaces, hot water boilers, unit radiators, radiant-fires, etc., are usually sold on the basis of one-third down and the balance in equal installments for a period of six months. Ranges, tank heaters, automatic heaters, washing machines and mangles are sold on the basis of one-fifth down and the balance in equal installments over a period of twelve months. Industrial and hotel appliances are usually sold on a thirty day basis, however, installments are arranged when desired and satisfactory arrangements can be made.

Oftentimes exceptions to the above are made on different appliances depending upon circumstances such as washing machines and mangles, for example, when first being introduced smaller down payments may be adopted.

In the case of large house heating furnaces, prices are quoted on the thirty day basis with the object of shortening the period for payment depending on the arrangements which can be made with the different customers.

All appliances which are priced on the installment basis are subject to a cash discount of five percent for payment in full within twelve days from date of billing.

You will note that in the majority of instances we make the down payments larger than the monthly payments. Our desire is to cover as much of the installation cost as possible in the first payment. On the other hand, we realize that small down payments are a large fac-

A. G. A. MONTHLY

tor in the increasing of sales, and we, therefore, in some instances such as the introduction of new appliances and in special sales, make the down payments much less than one-fifth of the selling prices.

Costs Included in Sales Prices.

In the establishing of sales prices we include in our installation and overhead costs all expense other than sales or new business expense, inasmuch as all such costs are charged directly to the revenue accounts, whereas, the new business costs are charged into our regular gas operating new business expense. However, we expect the net revenue from appliance sales to be at least sufficient to offset all new business or sales and promotion expense.

We include in our "installed costs" the appliance cost, freight, cartage and warehouse expense. Our "overhead" expense includes shop superintendence, contract or order handling, bookkeeping, collection and credit expense, bad debt losses, discounts, allowances, "call back" repair expense, inventory shrinkage, and interest. To the total of this overhead, we add the profit which we think it advisable to make. We then find what percentage of the estimated gross sales for the coming year our overhead and profit equal, and apply such percentage to the "installed cost" of each individual appliance. We have found that if the Cost Keeping Bureau watches closely from month to month the appliance costs, installation costs and overhead costs, and also takes into account any considerable increase or decrease in gross sales, which of course affect the overhead percentages, and promptly notifies the Sales Department, which in turn embodies such changes in their sales prices, it is possible to control the profit which is expected to accrue by the end of the year.

Mr. Geo. R. Horning, Utah Gas & Coke Company, Salt Lake City, Utah.

We believe the only practicable plan for selling gas appliances is to offer them on a basis of term payments with about 10 percent of the purchase price paid with order and the remainder be extended over a period of eight to twelve months. Along with these terms should be offered a worth while discount of 5 percent to 10 percent for cash either in thirty days or with the first gas bill due after the bill for appliances is rendered. 10 percent is not too much, although we are having very successful collections with an offer of 5 percent cash discount. When the time saved is considered and also the fact that some long drawn out payments are defaulted, this cash discount saves more than the amount of it.

The payment plan can probably be used more successfully by public utilities than any other lines of business because the purchaser is in contact with the office each month when the gas bill is paid or when calling at the office for other reasons.

Public utility consumers have been educated to expect these terms and the majority of them will take advantage of the payment plan and make purchases that they otherwise probably would not. Our losses on unpaid accounts have been small and our prices are made with the end in view of making the sales department show a small profit.

A-19 What gas companies are following a practice of having their meters read by high school boys? We understand satisfactory results were obtained with this plan in a number of cases.

ANSWERS

Mr. J. E. McLeod, The Laclede Gas Light Co., St. Louis, Mo.

I give below copy of section taken from a letter written November 30, 1918, to Mr. E. N. Wrightington of Boston on the meter reading situation at that time:

"(6) School Boys to read meters.

"This was a proposition submitted to me by the Head of one of the Departments of this Company and while it seems hardly practicable, it possesses the merit of novelty and originality. It was proposed that with the consent of the School Authorities, the boys ranging from twelve years of age upward in each school district be organized as U. S. Junior Industrial Army and that the readings in the school district be taken by the pupils who would be enrolled in the organization. The plan of the organization to be something on the order of the Boy Scouts. There would be a Captain with Lieutenants under him in each district and each boy was to be given a certain number of calls, say 20 or 30, to be made after school hours, the books to be turned in to the Captain the next morning and he in turn would deliver them to a representative of the Gas Company. The work to be paid for at the rate of 1½¢ a reading, the fund resulting therefrom to be donated by the school organization to war purposes. It was proposed to have the same organization deliver bills for the telephone companies and to read electric meters. It was thought that the boys would readily become proficient in reading meters and on account of the organization and the purpose for which the money was to be used it would create a great deal of enthusiasm and prove to be a solu-

A. G. A. MONTHLY

tion of the problem. The boy who would be charged with securing the readings in his immediate vicinity would be perfecting familiarity with the location of the meters, as well as have a personal acquaintance with the dog, and be able to return in the same evening to places that were found to be closed in his first call. While this plan might be feasible in the residence districts it would probably not be adaptable for the business localities but the principal objection was the magnitude of the undertaking and the vast amount of labor that would be required to put the plan in operation. As stated above, this last proposition is mentioned merely as an unusual and extraordinary suggestion which may have possibilities."

Because of the improved conditions in our meter reading force, after the demobilization of the armies, nothing further was done by this Company on the proposition. I have not heard of any companies taking up this plan, but possibly it is being tried out by companies in this district.

Mr. P. G. Ord, Montreal Light, Heat & Power Consd., Montreal, Canada.

This Company has not at any time found it advisable to employ school boys on work of this nature as our meter reading staff is a permanent institution throughout the year.

Mr. J. A. McArthur, Hartford City Gas Light Company, Hartford, Conn.

This Company never has engaged in the practice of having high school boys read meters, feeling that they were entirely too young for such work.

I do not know of any Company in this section who does employ boys so young to read meters.

Mr. Burton Smart, Portland Gas Light Company, Portland, Me.

The only time we hire high school boys for meter reading is occasionally during the summer vacations as substitutes and are very well satisfied with their services.

We think as a general thing the companies in this State do not follow the practice but have their regular meter readers.

Mr. H. V. Armstrong, Sioux Falls Gas Co., Sioux Falls, S. D. (State Rep. South Dakota).

This Company has never used high school boys to read meters, but when the writer was with the Northern Indiana Gas & Electric Company we tried out high school boys to read some meters. These boys did not work out well for us at all and it was necessary to discontinue the practice after we had gone only a short time. We found that the boys did not regard the job seriously enough and were inclined to play along on the work rather than try to clean up their routes. However, we tried this at a time when labor was at its very worst and I still believe that meters could be read by the right type of high school boy.

I have been with two companies that have used college students to read meters and the most efficient meter reading that I have seen was done by these college students.

Mr. Geo. R. Horning, Gen. Mgr., Utah Gas & Coke Co., Salt Lake City, Utah.

For some years past this Company has read its gas meters over a period of at least twenty days and the employment of high school boys, except during the summer vacation period, was impracticable. We have had boys of this age reading meters but have found that the employment of youths of from nineteen to twenty-one who are out of school and seeking steady employment has given us much better results. We are better able to hold to a schedule of meter reading, have more accurate readings and fewer "skips." This has very materially cut down the number of re-reads necessary as well as complaints from our consumers.

We believe from experience that regular and accurate meter readings are a very important part of satisfactory service, that the cost is no more and a saving in other directions is effected. Less time of both clerks and shop men is necessary for investigating complaints and there are fewer uncollectible bills to be charged off.

Mr. W. H. Barton, Portland Gas & Coke Co., Portland, Ore.

We do not use such plan as we only have about twenty meter readers and bill deliverers, and the crew being more or less permanent we would have to discharge a portion of them in order to employ high school boys during the summer months. If the above plan intends the use of high school boys during the entire year, working hours not occupied at school, we again would not be favorable to it as it would be necessary to employ a much larger number on account of the short hours, with the resulting increased labor turnover and additional training incident thereto.

We find that using a permanent crew of men from twenty-one to thirty-five years of age, paid an ample salary comparable with what these men could earn in somewhat similar positions, is the most satisfactory plan as regards accuracy, attitude toward the public and expense.

A. G. A. MONTHLY

No doubt, in small towns with a smaller number of men, and reading meters only a portion of each month, the plan might be satisfactory and save expense.

GENERAL PROBLEMS

- G-49 Can you advise on a rapid method of determination of sulphur in purifying material? Also the best method of naphthalene extraction from commercial gas?

ANSWERS

Mr. W. H. Fulweiler, The United Gas Improvement Co., Philadelphia, Pa.

We have very recently been doing a very large amount of work on the subject and have come to the conclusion that the electric method which I exhibited several years ago in New York is not only reliable and accurate, but is the only method that you can use where a large number of determinations have to be made.

This involves absorbing naphthalene from the gas in solutions of picric acid and determining a change in conductivity of the picric acid solutions.

Mr. W. A. Dunkley, Bureau of Mines, Urbana, Illinois.

In answer to the first question I would suggest an adaptation of the Parr* method as applied to the determination of sulphur in pyrite. On account of the difference in specific gravity of the constituents of oxide purifying material, great care must be taken in sampling to get a representative sample. The sample having been obtained, I would suggest drying 1 hour at 105 deg. C., then grinding in a coffee mill and a mortar until the sample passes a 60 mesh sieve. I would then take one half gram of the ground sample, mix intimately with 7 to 10 grams of sodium peroxide. Then add about one half gram powdered potassium chlorate and an equal amount of powdered benzoic acid (the benzoic acid might perhaps be omitted if the material contains considerable wood shavings). Put the mixture in a Parr bomb, secure the lid on the bomb and mix the contents vigorously by shaking. Heat the bomb over a large bunsen burner or a Meker burner for five minutes. The explosion within the bomb usually occurs in about one half minute after heat is applied but the five minutes heating insures complete fusion of the contents. Cool the bomb under a water tap, remove lid and place fusion crucible (part of the bomb) in a beaker containing 100 cc. of water. When the reaction has subsided the crucible is washed out, the solution is neutralized with hydrochloric acid and 4 cc. added in excess. Solution is then filtered, diluted to about 300 cc. and the sulphate precipitated from the hot filtrate by the addition of an excess of 10 per cent solution of barium chloride. The precipitate of barium sulphate is filtered off, washed with 5 per cent solution of hydrochloric acid, then with hot water, several times. The precipitate is then ignited at a dull red heat, cooled and weighed as barium sulphate and the equivalent sulphur is computed.

Since the percentage of sulphur in oxide may vary greatly, some experimentation may be necessary to get just the best mixture of purifying material and sodium peroxide. It is believed, however, that the above method will prove as rapid and reliable as any method in common use.

In regard to the best method of removal of naphthalene from commercial gas, I would say that I do not believe there is any generally recognized "best method." In general there are two ways of attacking the naphthalene problem. One is to prevent its excessive formation and the other is to extract it after it is formed assuming that a troublesome amount is unavoidably present in the gas.

Naphthalene may be formed in the coal gas retort or in the water gas set, although it is not generally noticeable in water gas production unless the carburetor and superheater temperatures are high. Volumes have been written relative to its formation in coal gas production and methods of extraction. For the results of a study of naphthalene forming condition the questioner is referred to the works of A. H. White and his associates in the Proc. of the Michigan Gas Association about 1905. As pointed out by those investigators the removal of naphthalene depends upon detarring the gas at such a temperature that the tar absorbs a maximum amount of naphthalene from the gas without removing an undue amount of the valuable hydrocarbons. Just what temperature at various points in the con-

*See J. Am. Chem. Soc. Vol. 0, pp. 764; 1918. "The use of sodium peroxide in certain quantitative processes."

J. Ind. Eng. Chem. Vol. 11, pp. 230; 1918. "A fusion bomb for sulphur determination in coal."

A. G. A. MONTHLY

densing system will depend somewhat on the apparatus installed and the conditions under which it is operated.

The scrubbing of gas with a tar low in naphthalene content or free from naphthalene has been a favorite means of removing naphthalene from gas. Water gas tar is a favorite tar to use. The scrubber of this kind would probably best be installed at a point where practically all of the coal tar had already been removed. The temperature of the water gas tar would probably have to be regulated fairly carefully to prevent scrubbing an undue amount of the illuminants from the gas. The tar may be circulated, but it must be remembered that it will become saturated with naphthalene eventually if additions of fresh tar are not made regularly.

- G-50** A ruling of our Public Utility Commission requires us to test each meter in use at least once in every five years and the constant periodic testing of consumers' meters has reached a point where it has become a financial burden upon gas companies. Can you from your records advise us as to the practice in the United States, operating under Public Service Commissions, in the matter of the number of years elapsing between the periodic testing of consumers' meters?

Association Headquarters, 130 East Fifteenth Street, New York, N. Y.

We give below a statement of the rules for the various Public Utility Commissions covering the periodic testing of consumers' meters which has been checked and brought up to date from information obtained from Bureau of Standards Circular No. 32. This, of course, would govern the practice of the states referred to on the attached list.

RULES OF STATE COMMISSIONS RELATING TO FREQUENCY OF METER TESTS

State	Years
Arizona	3
California	6
Colorado	5
Connecticut	5
District of Columbia	5
*Illinois	7
**Indiana	5
Kansas natural gas	5
Maine	5
Missouri	5
Montana	5
Nevada	3
New Hampshire	5
New Jersey	6
New York, First District	6 or 7
North Carolina	5
North Dakota	5
Oregon	5
Pennsylvania	5
Washington	5
West Virginia, natural gas	5 for domestic meters
Wisconsin	4

- G-51** We have been asked by a theatre syndicate to light two of their theatres with gas, the idea being to light the entire theatre from a centrally located plant.

We would like to obtain through your question box the experience of other member companies as to whether such a system of central control of gas lighting units is feasible and a description of systems that have been operated successfully.

**Period has been increased from 3 to 5 years since Circular No. 32, Fourth Edition, was printed.

*Period has been increased from 5 to 7 years since Circular No. 32, Fourth Edition, was printed.

A. G. A. MONTHLY

(Continued from page 74)

building Ericsson's Monitor, and Mr. Bradley took an active part in the building of that new warcraft, which subsequently met and defeated the Merrimac. While the Monitor was being built, Mr. Bradley criticised some parts of the plans, which subsequently proved to have been well founded. Mr. Bradley remained with that company until the close of the war, when he became interested in the discovery of oil in Western Pennsylvania, which took him to that State, and there he established a machine and boiler shop and engaged in the manufacture of oil well-drilling tools. He came back to New York City in 1870 and again became the construction engineer of the Continental Iron Works, taking charge of the gas plant and gas holder department, planning, superintending and erecting gas plants in various parts of the country. One of the gas plants built under his supervision was that of the Municipal Gas Works in West 44th street, New York City, and after the completion of those works in 1876, Mr. Bradley remained with the Municipal Gas Light Company as its engineer, at the same time acting as the engineer for the Metropolitan Gas Light Company.

The Consolidated Gas Company was incorporated in 1884, and two years later Mr. Bradley became Chief Engineer of the newly formed company. In the late 70's, Mr. Bradley became convinced that the illuminating power of coal gas could be greatly increased by the infusion of oil. At that time the Standard Oil Company was disposing of immense quantities of an oil for which no use had been found. Mr. Bradley called on Henry H. Rogers and asked him if he could have the use of some of that oil that was being thrown away. He explained the experimental use to Mr. Rogers, who told Mr. Bradley to take all he wanted. Mr. Bradley took this oil up to one of the old gas works and there experimented not only in enriching coal gas with it, but also what is known to-day as carburetted water gas. His experiments having been successful, Mr. Bradley made a contract with Mr. Rogers, whereby he purchased the oil for one cent a gallon. This oil subsequently became known as naphtha and later as gasoline. The price of the oil, because of its many uses, jumped to a figure that made it impossible to use it for gas-making purposes, and in its place to-day gas-oil is used.

Mr. Bradley on entering the employ of the Consolidated Gas Company of New York, made an extended trip in Europe, where he studied the gas plants in various countries, and on his return made an extended report on all the properties of the Consolidated Gas Company and policies for future guidance to meet the phenomenal growth of this city. His survey of the city led him to report that the time would come when the manufacture of all the gas necessary for the city would have to be made in some other place than on Manhattan Island. Two or three properties were called to his attention, and he selected the present site of nearly 400 acres at Astoria, Long Island, where the Astoria plant, the largest in the world, is now in operation. That plant, which has a daily capacity of 86,000,000 cubic feet of gas, was constructed under the plans and specifications in every detail as Mr. Bradley had planned. The equipment of the retort houses, the scrubbers, the tar extract houses and coal handling apparatus, as they are to-day, were all designed by Mr. Bradley.

Mr. Bradley leaves a wife, a daughter, Miss Bessie Bradley, two sons, George Bradley, Assistant Engineer of the Nevins Street plant of the Brooklyn Union Gas Company, and Charles W. Bradley, Gas Engineer of the Peoples Gas Light and Coke Company, in Chicago, Ill. Mr. Bradley was the Past Master of Greenpoint Lodge, No. 403 F. and A. M. He was President of the American Gas Institute in 1909 and 1910 and a member of numerous technical gas associations and societies.

AMERICAN GAS ASSOCIATION, Inc.

Current List No. 49—February, 1922

Rate Changes

Where information is not secured from company receiving increase, the source of information is noted in brackets. See Cumulative List No. 7, of March, 1921, for explanation of abbreviations. This list includes only changes reported as secured subsequent to June, 1921.

CALIFORNIA

Beaumont: Twin Cities Gas Company reports a voluntary decrease effective December 1, 1920. New rate: 1st MCF. \$3.40—next 4 MCF. \$2.90—next 5 MCF. \$2.65, over 10 MCF. \$2.40 per M. M.M.Chge. \$1.25. Old rate: 10¢ per M. less each step. C.P. 20.

CONNECTICUT

Wallingford: Co., reports decrease effective Jan. 1, 1922. New rate: 1st 25 MCF. \$2.10 gro., \$2.00 net, next 25 MCF. \$1.80 net, next 25 MCF. \$1.60. Over 100 MCF. \$1.50 net per M. P.P. Meters and M.M. Chge. unchanged.

INDIANA

Terre Haute: Co., reports increase effective Feb. 1, 1922. New rate: 1st 3 MCF. \$1.20, next 7 MCF. \$1.10, next 10 MCF. \$1.00. Over 20 MCF. 85¢ per M. Penalty 10% 10 days. B.t.u. 570.

IOWA

Albia: Light & Power Co., reports increase effective May 1, 1920. New rate: \$2.00 per MCF. Old rate effective July 1, 1918, \$1.85 per MCF. B.t.u. 590.

Boone: Co., reports change effective Dec. 1, 1921. New rate: \$1.80 gro., \$1.70 net per MCF. Subject to passage of 25 year franchise. If this fails by votes of people rate returns to \$2.05 gro., \$1.95 net per MCF. until Court adjusts rate. B.t.u. 525. Note: Co., reports to the City every 6 months. Granted to allow 8 per cent on fair valuation of property and must earn this before any further reductions can be sought. Rate adjustment by Board composed of one from Gas Co., one from City, and one chosen by these two.

Fort Dodge: Co., reports fourth increase effective Jan. 1, 1922. New rate: 1st CCF. 99¢—2 CCF. \$1.13—3 CCF. \$1.27—4 CCF. \$1.41—5 CCF. \$1.55—6 CCF. \$1.68—7 CCF. \$1.82—8 CCF. \$1.90—9 CCF. \$1.95—MCF. \$2.05 plus 16.1¢ per CCF. to 2 MCF. 2 MCF. \$366 plus 12.9¢ per CCF. to 3 MCF. 3 MCF. \$495. plus 15½¢ per CCF. for all over—disc. 10¢ per M. 15 days and 10¢ on each bill less than 1 MCF.

LOUISIANA

Baton Rouge: Co., reports decrease effective Jan. 1, 1922. New rate: 1st 2 MCF. \$2.10—next 4 MCF. \$2.00—next 34 MCF. \$1.85—next 40 MCF. \$1.60—over 80 MCF. \$1.45 per M. disc 10¢ per M. 10 days. M.M.Chge. 50¢.

A. G. A. MONTHLY

MASSACHUSETTS

- Attleboro:** Co., reports decrease effective Jan. 1, 1922. New rate: 17¢ per CCF., disc. less than 100 MCF. 2¢ per CCF., less than 400 MCF. 3¢ per CCF., over 400 MCF. 4¢ per CCF. except net sum between 934 CCF. and 100 MCF., in one month \$140.00 between 371 MCF and 400 MCF. \$520.00. P.P. Meters 15¢ per CCF. until price gears are changed soon after Jan. 1. M.M. Chge. according to Sec. 186, Chap. 742, Acts of 1914.
- Brockton:** * Co., reports decrease effective Oct. 20, 1921. New rate: 1st CCF. 82¢ gross, 70¢ net—next 4 CCF. 23¢—next 195 CCF. 15¢—next 30 MCF. 14¢—next 50 MCF. 13¢—disc. 2¢ per CCF. 10 days. M. M. Chge. 50¢ per month adjusted yearly. H.P. rates: 1st CCF. 92¢—next CCF. 28¢—next 193 CCF. 16¢—next 30 MCF. 15¢—next 50 MCF. 14¢ per C. Disc. and M.M.Chge. same.
- Clinton:** Co., reports decrease effective Jan. 1, 1922. New rate: 1st 50 MCF. \$1.90, disc. 10¢ per M. 10 days. Next 50 MCF. \$1.60 net—next 50 MCF. \$1.40, —over 150 MCF. \$1.25 net per M.
- North Adams:** Co., reports decrease effective Feb. 1, 1922. New rate: 1st 10 MCF. \$1.60—next 10 MCF. \$1.50—over 20 MCF. \$1.40 per M. disc. 10¢ per M. M.M. Chge. \$6.00 per year.

MICHIGAN

- Alpena:** Co., reports second increase effective Jan. 1, 1922. New rate \$2.00 per MCF. disc. 20¢ per M. M.M. Chge. \$1.00.
- Cheboygan:** Co., reports second increase effective Jan. 1, 1922. New rate: 1st 4 MCF. \$2.50, over 4 MCF. \$2.00 net per M. M.M. Chge. \$1.00.
- Flint:** Co., reports decrease effective Dec. 1, 1921. New rate: 1st 100 MCF. 14½¢ per CCF.—next 100 MCF. 12¢—next 800 MCF. 10½¢, over 1,000 MCF. 9.6¢ per CCF. B.t.u. 550 max. 470 min. 530 average.
- Iron Mountain:** Co., reports rate effective Jan. 1, 1922. \$2.76 gro. disc. 10% per MCF. Franchise periods increase in rate for every 10% increase in cost of coal, coke and oil over 1909.
- Manistee:** Co., reports fifth increase effective Aug. 1, 1921. New rate: 1st 5 MCF. \$2.10, next 5 MCF. \$2.00, next 10 MCF. \$1.90, next 10 MCF. \$1.80, over 30 MCF. \$1.70 per M. disc. 10¢ per M. P.P. M.M. Chge. \$1.00 per mo.
- Pontiac:** Co., reports decrease effective Dec. 1, 1921. New rate: 1st 100 MCF. 15¢ per CCF. Over 100 MCF. 11½¢ per CCF. disc. 1¢ per CCF. 10 days. M.M. Chge. 75¢ per mo. Birmingham and Royal Oak \$1.55 gro. \$1.45 net per MCF.

MISSOURI

- Clinton:** Light and Water Co., reports increase effective June 1, 1921. New rate M.M.Chge. \$1.50 for which 4 CCF. may be used—over 4 CCF. \$2.00 per MCF. Penalty 10¢ per M. 15 days. P.P. Meters \$2.10 per MCF. M.M. Chge. \$1.50 per month. Rate authorized by P.S.C. for 13 months unless changed by further order.
- Springfield:** Co., reports second increase effective Jan. 1, 1922. New rate: 1st 3 MCF. \$1.80, next 5 MCF. \$1.70, next 10 MCF. \$1.55, next 15 MCF. \$1.45, over 33 MCF. \$1.40 per M. P.P. Meters \$1.80 per M. M.M. Chge. \$1.00 per mo.

NEW HAMPSHIRE

- Concord:** Co., reports decrease effective Jan. 1, 1922. New rate: 1st 10 MCF. \$1.60—next 20 MCF. \$1.50—next 20 MCF. \$1.40—over 50 MCF. \$1.20 per M. Disc. 10¢ per M. S. Chge. unchanged. B.t.u. 565.

A. G. A. MONTHLY

NEBRASKA

- Lincoln:** Co., reports following change effective Feb. 1, 1921. Figured first of each month and based on previous month's operation cost of coke, oil and taxes per MCF. sold or 93% of gas made whichever figure is the greatest, plus 75¢ fixed charge per MCF. of sales or make, plus 25¢ per meter per month. Penalty of 10¢ per MCF. is added if not paid within discount period. Rate has varied from \$1.53 for February, 1921, to \$1.21 for December, 1921.
- Omaha:** City reports rate change effective August 1, 1921. 1st 5 c. f. 85¢—next 10 MCF. \$1.40 per M.—next 50 MCF. \$1.30—next 50 MCF. \$1.20—next 100 MCF. \$1.10—over 210 MCF. \$1.00 per M. disc. 10¢ per M. City reports another rate change effective Jan. 1, 1922. New rate: 1st 5 c. f. 85¢—next 60 MCF. \$1.30—next 50 MCF. \$1.20—next 100 MCF. \$1.10—over 210.5 MCF. \$1.00 gro. per M. disc. 10¢ per M.

NEW YORK

- Albion:** Western N. Y. Utilities Co., reports rate effective December 17, 1921. 1st MCF. \$2.60—next 25 CCF. \$2.35—over 35 CCF. \$2.00 per M. disc. 10¢ per M. P.P. M.M.Chge. 75¢ per mo. P. S. C. Bul.
- Bay Shore:** Co., reports decrease effective Dec. 28, 1921. New rate: \$1.80 per MCF. M.M. Chge. \$1.00. P.S.C. Bul. 697.
- Beacon:** Co., reports decrease effective Jan. 31, 1922. New rate: 1st MCF. \$2.20—next 9 MCF. \$2.00—over 10 MCF. \$1.90 per M. Block rates per MCF. available to consumers who guarantee 15 MCF. per mo. 1st 100 MCF. \$1.80—over 100 MCF. \$1.60 per M. M.M. Chge. \$27.00 per mo. disc. 10¢ per MCF. P.P. P.S.C. Bul. 696.
- Granville:** Co., reports increase effective Dec. 1, 1921. New rate: 1st CCF. \$1.00—over CCF. 25¢ per CCF. M.M.Chge. 75¢ per month. P.S.C. Bul.
- Haverstraw:** Co., reports decrease effective December 1, 1921. New rate: 1st CCF. \$1.25—next 3 CCF. 25¢ per C.—next 196 CCF. 22¢—next 100 CCF. 21¢—next 200 CCF. 20¢—next 500 CCF. 19¢—next 500 CCF. 18¢—next 500 CCF. 17¢—next 500 CCF. 16¢—next 500 CCF. 15¢—next 500 CCF. 14¢—next 500 CCF. 13¢—next 500 CCF. 12¢—next 500 CCF. 11¢—over 5,000 CCF. 10¢ per C. disc 5% prompt pay. M.M. Chge. \$1.00.
- Ithaca:** Co., reports decrease effective Jan. 1, 1922. New rate: Ind. 1st 10 MCF. 19.7¢ per CCF. next 10 MCF. 17.2¢ next 10 MCF. 16.7¢ next 20 MCF. 14.7¢—over 50 MCF. 13.7¢ per CCF. disc. 1¢ per CCF. P.P.
- Kingston:** Co., reports a change effective Dec. 13, 1921. Rate unchanged. M.M. Chge. substituted for S. Chge. of same amount. P.S.C. Bul.

OHIO

- Cincinnati:** Union Gas & Electric Co., (Natural) reports increase effective Dec. 15, 1921. New rate: April to October, incl. 50¢ per MCF. November to March, inclusive, 1st 5 MCF. 50¢ next 5 MCF. 55¢ next 5 MCF. 60¢ over 15 MCF. 65¢ per MCF. M.M. Chge. 75¢ throughout year. Old rate 35¢ per MCF. M.M. Chge. 35¢ B.t.u. not less than 800.

CANADA

- Toronto:** Co., reports decrease effective Feb. 15, 1922. New rate: 1st 10 MCF. 10¢ per CCF.—next 90 MCF. 9¢—over 100 MCF. 8½¢ per CCF. S. Chge, 50¢ per meter per month.

A. G. A. MONTHLY

(Continued from page 82)

be duplicated by any other agency, and the reduction of human waste, aside from the sentimental value, is beyond all calculation.

With a practical demonstration before the industry of what has been accomplished along casualty lines, it has always appealed to the writer that the leaders among the Public Utilities were particularly slow in failing to grasp the opportunity to do a similar constructive work in respect to Fire Insurance matters. The Manager of every Public Utility in the land realizes, if he thinks about the matter at all, that while he is paying perhaps small annual premiums to the fire insurance companies for protection, over a period of years, and taken in the aggregate, these premiums amount to many thousands of dollars, and the question is, what does he receive for it? Certainly not much more than protection, and that at a cost which is entirely incommensurate with the risk or hazard.

Every operator knows from his own experience that fire losses among the Public Utilities are rare, and perhaps the fire insurance companies know this better than he. At least they should.

As an example, the writer some years

ago made a survey among the member companies of Utilities Mutual as to their fire losses covering a period of ten years. While the results were not complete, nor absolute, at least they were indicative. It was found that in this ten year period the losses paid amounted to 16.4c of each dollar of premium given to the insurance companies.

Again the representative of one of the large holding companies in the country has told the writer that over a twenty year period, the fire losses absorbed just 25 per cent of the premiums paid.

There is substantiating evidence in abundance, particularly that submitted at the annual meeting of the American Gas Association in 1920, to warrant the belief that the above figures are neither guesses on the one hand, nor unusual on the other.

The industry is beginning to realize that these statements are indicative of general facts and that as an industry there is the possibility of saving thousands of dollars annually.

If the premises are correct, why isn't some action taken to save these dollars? The remedy lies in our own hands if we choose to make it so.

(Continued from page 88)

"The records of the Department show that the public is coming more and more to avail itself of the Department's services. This is highly gratifying not only because the purposes of the establishment of this Department are thus served, but because in that way the Commission itself is kept in close and constant touch with the needs of that portion of the public which consumes the products of the utilities."

"The public has an interest greater than the selfish interest of the few who would stop the utility development of a community to satisfy a political ambition or a personal grudge. It is a sad picture to see a community of inflamed citizens, following the leadership of one man, or even several men, in an effort to handicap or destroy a local utility, all because of selfishness on the part of a few self-appointed leaders."
JAMES A. PERRY.

Employment Bureau

SERVICES REQUIRED

WANTED—Fitter who can do good work on installation of water heaters, ranges and who thoroughly understands Gas Company appliance work. Address A. G. A.

Key No. 01.

SERVICES OFFERED

WANTED—Position as executive in a local office of a gas or a combination gas and electric company. Have had a practical experience in all branches of commercial utility work. Have been successful in dealing with the public and promoting good will of utility companies. Educated in commercial and accounting methods as compiled by N. C. G. A. and N. E. L. A. Well acquainted in office routine and very exact on details and execution of same. Address A. G. A.

Key No. 114.

GAS APPLIANCE SALESMAN—Especially trained in water and house heating; 15 years' experience; desires selling position, either road or local, with aggressive appliance manufacturer or gas company. Will furnish best selling reference. Drawing account against commission. Address A. G. A.

Key No. 125.

WANTED—Position by a man of large general experience in gas business who has made a special study of sales promotion problems, and who would prove valuable as an assistant to a busy executive in any department. Address A. G. A.

Key No. 134.

ENGINEER—Producing results in operating desires to make change, either as Engineer or Assistant Engineer of Works with output over 20,000,000 daily output. Or in Managing capacity. Address A. G. A.

Key No. 135.

AS MANAGER OR SUPERINTENDENT—30 years old, 15 years experience as Superintendent, 2 years in By-Product Coke Plants. Familiar with Commercial and Accounting work. Present Supervising several small plants. References.

Address Key No. 136.

WANTED—Position as Industrial Fuel Engineer or manufacturer's representative of Domestic or Industrial appliances seeks employment. Prefers Eastern territory but will consider other location. Moderate salary and commission or straight salary. 34 years of age. Married. Reliable references. Address A. G. A.

Key No. 137.

WANTED—Gas engineer, 38, with 15 years' experience in the manufacture, distribution, sales and industrial fuel end of the business, wishes to connect up at once with go-ahead public utility or equipment manufacturer. Competent executive and good salesman. Address A. G. A.

Key No. 138.

HIGH GRADE Industrial Sales Engineer wanted. Must be man having had factory experience and knowledge of house heating. Gas company in middle west has need of such a man and requests applicants to give full particulars of experience. Appointment for interview will be arranged. Address American Gas Association.

Key No. 0-3.





AMERICAN GAS ASSOCIATION, INC.

HEADQUARTERS 150 EAST 15TH ST., NEW YORK, N. Y.

Officers and Directors

PRESIDENT	DANA D. BARNUM	Boston, Mass.
VICE-PRESIDENT	R. B. BROWN	Milwaukee, Wis.
TREASURER	H. M. BRUNDAGE	New York, N. Y.
SECTIONAL VICE-PRES	C. N. CHUBB	Davenport, Iowa
SECTIONAL VICE-PRES	A. P. POST	Philadelphia, Pa.
SECTIONAL VICE-PRES	J. S. DeHART	Newark, N. J.
SECTIONAL VICE-PRES	E. HAASE	Milwaukee, Wis.
SECTIONAL VICE-PRES	A. A. HIGGINS	Providence, R. I.

CHARLES A. MUNROE	Chicago, Ill.
GEORGE B. CORTELYOU	New York, N. Y.
SAMUEL T. BODINE	Philadelphia, Pa.
R. C. CONGDON	Atlanta, Ga.
MARTIN B. DALY	Cleveland, Ohio.
CHARLES H. DICKEY	New York, N. Y.
HENRY L. DOHERTY	New York, N. Y.
L. R. DUTTON	Jenkintown, Pa.
W. G. GRIBBEL	Philadelphia, Pa.
ARTHUR HEWITT	Toronto, Can.
C. L. HOLMAN	St. Louis, Mo.
J. B. KLUMPF	Philadelphia, Pa.
F. H. KNAPP	Pittsburgh, Pa.
A. B. MACBETH	Los Angeles, Cal.
THOMAS N. McCARTER	Newark, N. J.
EMERSON McMILLIN	New York, N. Y.
GEORGE D. ROPER	Rockford, Ill.

Section Officers

ACCOUNTING—Chairman	E. HAASE	Milwaukee, Wis.
Vice-Chairman	J. W. HEINS	Philadelphia, Pa.
Secretary	H. W. HARTMAN	Ass'n Headqtrs.
ADVERTISING—Chairman	A. A. HIGGINS	Providence, R. I.
Vice-Chairman	B. J. MULLANEY	Chicago, Ill.
Secretary	C. W. PERSON	Ass'n Headqtrs.
COMMERCIAL—Chairman	A. P. POST	Philadelphia, Pa.
Vice-Chairman	Wm. GOULD	Boston, Mass.
Secretary	LOUIS STOTZ	Ass'n Headqtrs.
MANUFACTURERS—Chairman	J. S. DeHART	Newark, N. J.
Vice-Chairman	F. A. LEMKE	Kalamazoo, Mich.
Secretary	P. H. HALL	Ass'n Headqtrs.
TECHNICAL—Chairman	C. N. CHUBB	Davenport, Iowa
Vice-Chairman	F. C. WEBER	New York, N. Y.
Secretary	H. W. HARTMAN	Ass'n Headqtrs.

SECRETARY-MANAGER	OSCAR H. FOGG	Ass'n Headqtrs.
ASS'T SECRETARY-MANAGER	LOUIS STOTZ	Ass'n Headqtrs.
ASS'T SECRETARY-MANAGER	PERCY H. HALL	Ass'n Headqtrs.
ASS'T TREASURER	W. CULLEN MORRIS	New York, N. Y.

